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Draft Environmental Impact Statement and California Desert Conservation Area Plan Amendment for the Proposed Chevron Energy Solutions Lucerne Valley Solar Project

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Volume II: Appendix

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Prepared for:

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BARSTOW FIELD OFFICE

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Prepared by:

ecology and environment, inc.
International Specialists in the Environment

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Public Scoping Summary Report

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FINAL

Environmental Impact Statement
and
Amendment to the California Desert Conservation Area Plan
Lucerne Valley Solar Project
San Bernardino County, California

Public Scoping Summary Report

October 9, 2009

United States Bureau of Land Management

Prepared for

Bureau of Land Management
Barstow Field office
2601 Barstow Road
Barstow, CA 92311

By

Ecology and Environment, Inc.
130 Battery St, Suite 400
San Francisco, CA 94111

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Lucerne Valley Solar Project
Final Public Scoping Summary Report

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Abbreviations and Acronyms Used in this Report

BLM	Bureau of Land Management
CDCA	California Desert Conservation Area
CES	Chevron Energy Solutions
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
DEIS	Draft Environmental Impact Statement
EEMP	Equipment Emission Mitigation Plan
EIS	Environmental Impact Statement (NEPA)
FLPMA	Federal Land Policy and Management Act
GhG	Greenhouse Gas
kV	kilovolt
LVEDA	Lucerne Valley Economic Development Association
MW	Megawatt
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NGO	Nongovernmental Organization
NHPA	National Historic Preservation Act
NOI	Notice of Intent
OHV	Off-Highway Vehicle
PV	Photovoltaic
ROW	Right-of-Way
SCE	Southern California Edison
TMDL	Total Maximum Daily Load
WEMO	West Mojave Plan
WOUS	Waters of the United States

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1.0 INTRODUCTION

In compliance with the National Environmental Policy Act of 1969 (NEPA), as amended, and the Federal Land Policy and Management Act of 1976 (FLPMA), as amended, the U.S. Department of the Interior, Bureau of Land Management (BLM) is preparing an Environmental Impact Statement (EIS). The purpose of the EIS is to identify potential effects that may occur with the construction, operation and maintenance, and decommission and restoration of the proposed Chevron Lucerne Valley Solar Project (the project). The project would be located approximately 8-miles east of Lucerne Valley in rural San Bernardino County, California. Chevron Energy Solutions (CES), a Chevron subsidiary, proposed the project and requested a right-of-way (ROW) authorization from the BLM to construct and operate a 45 megawatt (MW) solar photovoltaic (PV) energy generation facility and connect it to the existing Southern California Edison (SCE) 33-kilovolt (kV) distribution system.

The BLM has completed the public scoping phase of the project to help define the issues, impacts, and potential alternatives that will be analyzed in the EIS. Scoping is an early phase of the NEPA review process and is used to focus the environmental analysis and incorporate issues identified by the public into the analysis. This report summarizes the activities conducted during scoping, includes comments received during the scoping period, and indicates how the BLM will address specific comments in the EIS. The BLM will use the comments received during the scoping period to:

- Identify key issues to focus the analysis;
- Identify reasonable alternatives for analysis;
- Present environmental impacts of the project and alternatives;
- Identify ways to avoid or reduce environmental impacts;
- Inform the agency decision-making process; and
- Encourage public participation.

1.1 Purpose and Need

The BLM is responding to a CES application for a ROW grant to construct, operate, maintain, and decommission a 45 MW thin-filmed solar PV facility on BLM lands, and after decommissioning, restore the land under Title V of the Federal Land Policy and Management Act of 1976 (43 U.S. Code 1761). The Energy Policy Act of 2005 (Public Law 109-58), signed by President Bush on August 8, 2005, and BLM's Solar Energy Development Policy, which was issued on April 4, 2007, establish a framework to process applications for ROW and directs the BLM to be responsive to solar energy project applicants while protecting the environment. Section 211 of the Energy Policy Act called for the approval of 10,000 MWs of non-hydropower renewable energy generation on public lands within 10 years of the Act (Public Law 109-58 2005). The California Desert Conservation Area (CDCA) Plan and the Federal Land Policy Management Act of 1976 both recognize that the CDCA will be managed for multiple uses.

Federal participation is supported by the Secretary of the Interior's Secretarial Order No. 3285 (March 2009) directing all Department of the Interior agencies and departments, including the BLM, to encourage the timely and responsible development of renewable energy, while protecting and enhancing the Nation's water, wildlife and other natural resources.

The BLM will take into consideration the provisions of the Energy Policy Act of 2005, Secretarial Orders 3283 *Enhancing Renewable Energy Development on the Public Lands* and 3285 *Renewable Energy Development by the Department of the Interior* in responding to the CES application. Approval of the project also will require a land use plan amendment to the CDCA Plan (BLM 1980).

If the BLM decides to approve or deny issuance of a ROW grant to CES, BLM's actions may also include amending the CDCA Plan concurrently. For the decision to be made, the BLM will decide whether or not to grant a ROW, and if so, under what terms and conditions.

1.2 Description of CDCA and WEMO Plans

The CDCA Plan encompasses 25-million acres of land in Southern California designated by Congress in 1976 through the FLPMA. Congress directed the BLM to prepare and implement a comprehensive, long-range plan for the management, use, development, and protection of public lands within the CDCA. The CDCA Plan is based on the concepts of multiple use, sustained yield, and maintenance of environmental quality (BLM 1980). The CDCA Plan provides overall regional guidance for management of the public lands in CDCA and establishes long-term goals for protection and use of the California desert.

The CDCA Plan establishes four multiple use classes, multiple use class guidelines, and plan elements for specific resources or activities such as motorized-vehicle access, recreation, and vegetation. The multiple use classes are defined as follows:

- Class C (Controlled Use)
- Class L (Limited Use)
- Class M (Moderate Use)
- Class I (Intensive Use)

The CDCA Plan established a network of 16 utility planning corridors across the Mojave and Colorado Deserts. Each corridor is 2- to 5-miles wide. The intent of the corridors is to provide a delivery system network that meets public needs in a manner that minimizes the proliferation of widely separated ROWs by encouraging the joint use of corridors for utilities. To accommodate those instances when a utility may require locating outside of a "planned" utility corridor, several "contingent" corridors were identified by the CDCA plan that could be activated through a CDCA plan amendment.

The CDCA Plan also included a Motorized-Vehicle Access Element that designates all public land in the California Desert as “open (roads are not required for vehicle use),” “closed (no vehicles allowed),” or “limited (vehicles must stay on roads)” for vehicle use, based on BLM’s multiple-use classes (BLM 1980). In “open areas” travel is permitted anywhere within the area if the vehicle is operated responsibly in accordance with regulations (BLM 1980).

The West Mojave Plan (WEMO) was established in 2006 and is composed of a federal component that amends the CDCA Plan of 1980; and a Habitat Conservation Plan component that covers State and local government actions (BLM 2006). WEMO presents a comprehensive strategy to conserve and protect the desert tortoise, the Mohave ground squirrel and nearly 100 other sensitive plants and animals and the natural communities of which they are a part, and provides a streamlined program for complying with the requirements of the Federal and California Endangered Species Acts.

1.3 Description of the Project

Proposed Photovoltaic Solar Plant: CES has applied for a BLM ROW authorization to construct and operate a 45 MW, PV power plant. The solar plant would produce electrical power using solar PV arrays comprised of several PV panels. Each panel would measure about 40 inches by 55 inches, depending on the manufacturer. Two of these panels would be placed in portrait orientation (i.e., with the long axis oriented vertically) on a south facing rack tilted at a 20- to 25-degree angle from horizontal. Each panel would have a maximum power output of 135 watts. This solar plant would be connected to an existing 33-kV distribution system adjacent to the project site.

The project site would be located on approximately 516 acres of federal land managed by the BLM. The project site is in the County of San Bernardino, California, approximately 8-miles east of the junction of Barstow Road and Old Woman Springs Road in Lucerne Valley (Figure 1). The site is bounded by Foothill Road on the north and Santa Fe Fire Road, a BLM open route, traverses the site in a north-south direction. A portion of Zircon Road, a BLM open route, traverses the eastern portion of the project site. This segment of Zircon Road would be realigned outside the project boundaries as part of the project, but would remain designated as an “open” motorized vehicle access route.

Within the proposed ROW, the solar field, control and maintenance building, and the switchyard would occupy nearly the entire site. About 90 percent of the area will be used for the solar panels, and the remaining area would be used for roads, power lines, switchyard, a control/maintenance building and a parking area.

The project would be constructed in two phases. Phase I of the project would consist of up to 180,000 PV panels with a generating capacity of 20 MW. Phase II, with a generating capacity of 25 MW, would be similarly configured.

Proposed CDCA Plan Amendment: The project site is managed in accordance with the CDCA Plan and the WEMO. The project also requires an amendment to the CDCA Plan to reroute a portion of Zircon Road outside the project boundaries.

1.4 NEPA Requirements

Scoping is the coordination and consultation process required under NEPA regulations to ensure that interested parties are allowed a forum to provide input on the issues to be analyzed in the environmental document. This process ensures that significant public issues, alternatives, and impacts are addressed in environmental documents, and determines the scope and degree to which these issues and impacts will be analyzed. Scoping is required by the Council on Environmental Quality (CEQ) 1979 regulations (40 Code of Federal Regulations [CFR] 1501.7). Public involvement early in the scoping process is the first step in providing a solid foundation for all project activities.

The following interested parties were invited to participate in scoping:

- Federal agencies;
- State agencies;
- County agencies;
- City agencies;
- Affected tribes;
- Affected communities
- Businesses;
- Interested non-governmental organizations; and
- Interest individuals.

One of the mechanisms to ensure that input from the parties listed above is included in the environmental document is for the lead agencies to hold scoping meetings early in the NEPA process. Although the scoping period is 30 days, it is not the only time in which interested parties can comment on the environmental document. A similar process will begin as soon as the draft environmental document is released. In addition to providing comments on the Draft EIS analysis at that time, the public will be able to comment on the adequacy of how their scoping comments have been addressed in the environmental document.

2.0 DESCRIPTION OF THE SCOPING PROCESS

The 30-day scoping period for the project was from July 23, 2009 to August 22, 2009, and commenced with publication of the Notice of Intent (NOI) in the *Federal Register* (see Appendix A). The NOI announced a period for public scoping of alternatives, issues, impacts and planning criteria that would be used in CDCA Plan amendment. The NOI also requested the views of other agencies as to the scope and content of the environmental information that was germane to the statutory responsibilities or areas of expertise for those agencies. Federal, state, and local agencies as well as individuals or organizations that were interested or affected by the BLM's decision on this project were invited to participate in the scoping process and, if eligible, could request or be requested by the BLM to participate as a cooperating agency.

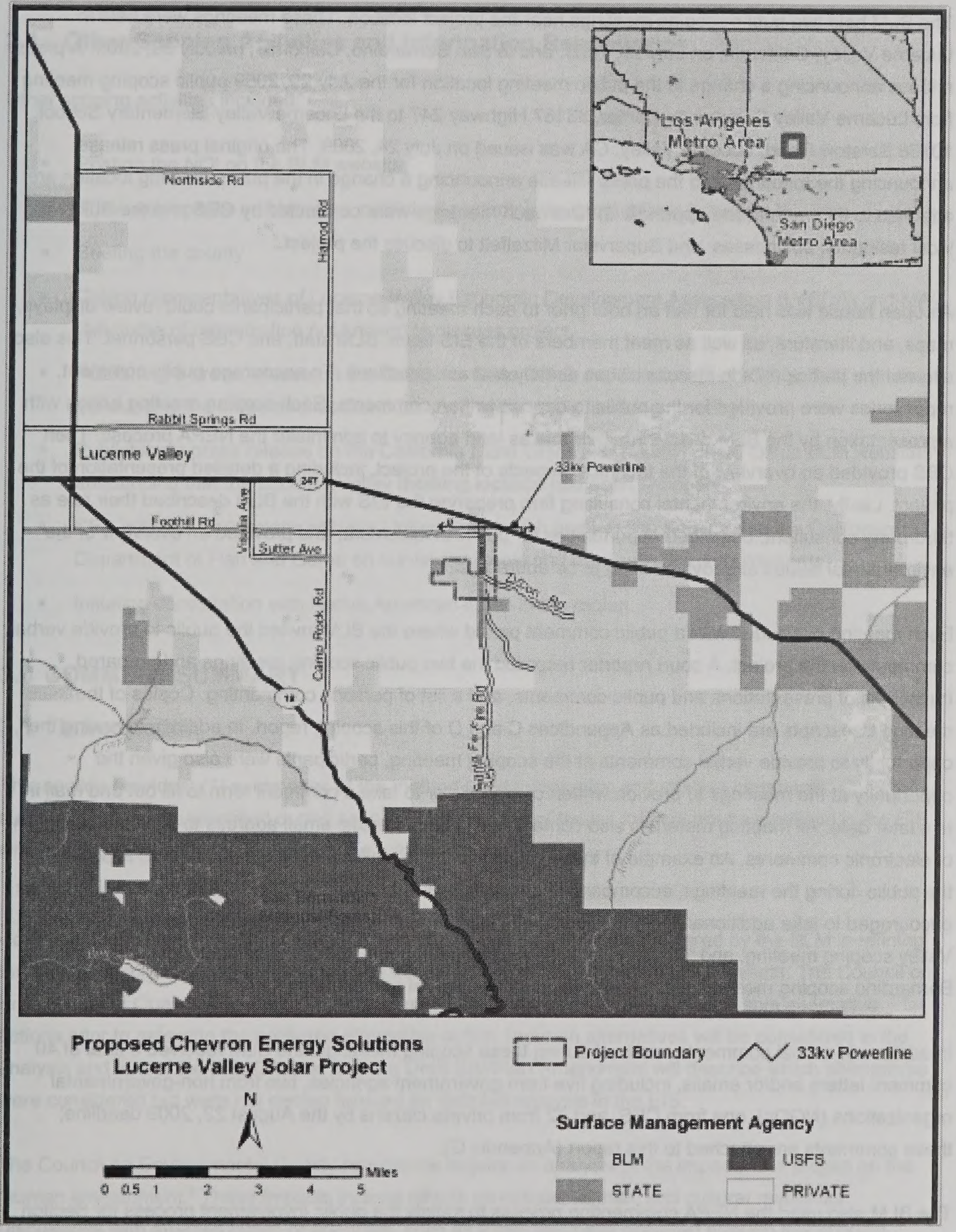


Figure 1 Project Overview

The BLM held two public scoping meetings near the project location. These meetings were held in Lucerne Valley, California, on July 29, 2009, and in San Bernardino, California, on July 30, 2009. A press release announcing a change in the public meeting location for the July 29, 2009 public scoping meeting from Lucerne Valley Community Center, 33187 Highway 247 to the Lucerne Valley Elementary School, 10788 Barstow Road, Lucerne Valley, CA was issued on July 24, 2009. The original press release announcing the meetings and the press release announcing a change in the public meeting location are attached to this report (see Appendix B). Outreach meetings were conducted by CES and the BLM with local residents, businesses, and Supervisor Mitzelfelt to discuss the project.

An open house was held for half an hour prior to each meeting so that participants could review displays, maps, and literature, as well as meet members of the EIS team, BLM staff, and CES personnel. This also allowed the participants to discuss issues directly and ask questions. To encourage public comment, repositories were provided for the public to deposit written comments. Each scoping meeting began with a presentation by the BLM describing their role as lead agency to administer the NEPA process. Then CES provided an overview of the technical aspects of the project, including a detailed presentation of the project. Lastly, the environmental consulting firm preparing the EIS with the BLM described their role as third-party consultant, described opportunities for public involvement, and provided an overview of the environmental issues already identified to be addressed.

Each meeting concluded with a public comment period where the BLM invited the public to provide verbal comments on the project. A court reporter recorded the two public scoping meetings and prepared transcripts of presentations and public comments, and a list of persons commenting. Copies of the meeting transcripts are included as Appendices C and D of this scoping report. In addition to having the opportunity to provide verbal comments at the scoping meeting, participants were also given the opportunity at the meetings to provide written comments or to take a comment form to fill out and mail in at a later date. All meeting materials also contained a project-specific email address to facilitate collection of electronic comments. An example of these comment forms, as well as all other materials available to the public during the meetings, accompany this report (see Appendix E). Attendees of the meetings were encouraged to take additional comment forms with them. Seventy eight people attended the Lucerne Valley scoping meeting, and 13 people provided verbal comments. Seven people attended the San Bernardino scoping meeting, and two people provided verbal comments.

In addition to verbal comments received during these scoping meetings, the BLM received a total of 40 comment letters and/or emails, including five from government agencies, two from non-governmental organizations (NGOs), one from CES, and 32 from private citizens by the August 22, 2009 deadline; these comments are attached to this report (Appendix G).

The BLM also used the NEPA commenting process to satisfy the public involvement process for Section 106 of the National Historic Preservation Act (NHPA) (16 U.S. Code 470f) as provided for in 36 CFR 800.2(d)(3).

2.1 Other Scoping Activities and Information Repositories

Other scoping activities included:

- Posting the NOI on the BLM website.
- Three newspaper articles were published regarding the project (see Appendix I)
- Briefing the county
- Calling representatives of Lucerne Valley Economic Development Association (LVEDA) and MAG (full name of organization not known) to discuss project
- Publishing a press release on the California State Office and Barstow Field Office BLM websites announcing the times and locations for each of the public scoping meetings.
- Publishing a press release on the California State Office and Barstow Field Office BLM websites announcing that the Lucerne Valley meeting location had been changed.
- CES initiated discussions with the United States Fish and Wildlife Service and the California Department of Fish and Game on survey protocols and data collection requirements.
- Initiating consultation with Native American tribes in the region.

3.0 COMMENT SUMMARY

3.1 Introduction

This section provides: (1) summaries of the method used to organize and analyze comments; (2) summaries of issues identified during scoping; and (3) a list of issues that will not be identified in the EIS with justification as to why they will not be addressed.

Comments regarding the project and alternatives to the project will be considered by the BLM in refining the project description and alternatives that will serve as the basis for assessing impacts. The Council on Environmental Quality regulations implementing NEPA requires an analysis of available alternative actions prior to selecting the preferred alternative action. Input on alternatives will be considered in the analysis and text of the EIS. Chapter 2 of the Draft EIS/Plan Amendment will describe which alternatives were considered but were not carried forward for detailed analysis in the EIS.

The Council on Environmental Quality regulations require an analysis of the impacts of a project on the "human environment." These impacts include effects on natural, human, and cultural resources. Discussions with affected public or agencies, such as those that have occurred through this scoping effort, help to define and evaluate effects of the different alternatives on the human environment.

Comments relating to environmental impacts will be considered by BLM in developing the scope of EIS technical studies. Chapter 3, Affected Environment, and Chapter 4, Environmental Consequences, of the EIS will address the issues incorporated into the study. Concerns about the EIS studies and decision-making processes will be considered in refining and modifying the EIS process throughout the remainder of the EIS preparation.

Some comments may be considered outside the scope of this EIS if: (1) the issue relates to facilities not included in this project; (2) the issue is not within the jurisdiction of BLM to resolve; or (3) the issue cannot be reasonably addressed within the scope of this process or is being addressed through a separate NEPA process. In addition, personal opinions of individuals or special interest groups about the project, wind power, the BLM, and other topics are also considered outside the scope of the EIS and will not be addressed.

3.2 Organization of Comments

Oral comments from the scoping meetings, comment forms, e-mails and letters received through August 22, 2009 were reviewed, documented, and entered into a database to facilitate organization, sorting, and analytical review. The database was structured to organize comments into separate issue categories and by type of comment (e.g., letter, e-mail, or oral comment from scoping meetings). Using the experience and professional judgment of the study team, the comments were organized according to 21 major issue categories as they relate to the EIS. The issue categories are as follows and described in detail in Section 3.4.

The Project and Alternatives: This category includes comments about various aspects and components of the project as well as suggestions for project alternatives that should be considered in the EIS. Comments also identified topics relative to the planning and EIS preparation process, including public review opportunities. Identified issue categories are:

1. NEPA Process (including EIS preparation and studies)
2. Project Alternatives
3. Project Description
4. Purpose and Need

Environmental Impacts: This category includes comments about the project's potential impacts on natural resources, human resources, and cultural resources as well as comments about social and economic concerns. The issue categories identified include the following:

1. Aesthetics/Visual Resources
2. Air Quality
3. Biological Resources
4. Climate Change

5. Cultural Resources
6. Cumulative Impacts
7. Environmental Justice
8. Geologic Resources
9. Growth Inducement
10. Hazardous Wastes
11. Hydrology, Water Quality and Water Resources
12. Land Use
13. Recreation
14. Social and Economic Considerations
15. Soils
16. Traffic and Transportation
17. Utilities

3.3 Summary of Comments

All comments received during the scoping period are presented in Table 1, located at the end of this chapter. It should be noted that comments presented in Table 1 have not been changed from their original format; therefore, the comments reflect the views of the commenters and may contain factual errors. Transcripts from each of the public scoping meetings (Appendices C and D), and written comments received during the public scoping period (Appendix G), are attached to this report.

The following governmental agencies provided comments:

- LVEDA
- Town of Apple Valley
- U.S. Environmental Protection Agency (EPA)

The following NGOs provided comments:

- California Desert Coalition
- California Wilderness Coalition
- Defenders of Wildlife
- Desert Protective Council
- Mojave Desert Land Trust
- Natural Resources Defense Council
- Partnership for Johnson Valley
- Sierra Club
- Sierra Club Desert Committee Energy Committee

- The Audubon Society
- The Nature Conservancy
- The Wilderness Society
- The Wildlands Conservancy

Members affiliated with the following organizations/groups submitted comments (in some cases, full names of some organizations were not provided):

- California State Lands Commission
- Friends of Giant Rock
- Hemet Ranch
- Johnson Valley Improvement Association
- MAC
- MDAQMO
- myjeeprocks.com
- Off Road Business Association
- Society for Conservation of Bighorn Sheep
- U.S. Army
- U.S. Marine Corps
- Victor Valley College

The following companies submitted bids to provide services:

- Power Substations
- HelioPower
- FenceCorp

The following organizations/groups were present at the Lucerne Valley public scoping meeting but did not provide oral or written comments:

- AREP
- California Department of Fish and Game
- County of San Bernardino
- HVEC
- LVMAC
- Lucerne Valley Market and Hardware
- Mojave Environmental Education Consortium

The following organizations/groups were present at San Bernardino public scoping meeting but did not provide oral or written comments:

- Edison Intl
- CSUSB

In addition, 15 individuals provided comments during the two public scoping meetings, and 28 individuals submitted a total of 32 written comments. Of the 32 written comments, 11 were requests for information (such as a request for a map or a request to be added to the mailing list), three were bids to provide services (see above), and two were scams.

3.4 Issues Identified During Scoping

This section provides a summary of issues identified during scoping organized by issue category. Some statements summarize multiple comments while others present only one comment. The method used to identify and categorize issues is discussed in Sections 3.2 and 3.3.

NEPA Process

Concern was expressed about the BLM's role in renewable energy project development and their role in expediting the projects under federal mandates. For example, concern was raised about whether the BLM would be contradicting its mission statement to preserve and protect public lands. Some commenter's also suggested that this project should be addressed as part of the Solar Energy Development Programmatic EIS being prepared by the Department of Energy and the BLM.

Project Alternatives

Primary concerns involved the use of lands described as "undisturbed or pristine" versus sites in previously disturbed areas. Commenters generally expressed support of projects being sited on land that has been previously graded or altered from other forms of project activity, and suggested moving the project to other areas owned by the BLM that are already impacted by other renewable energy projects, such as land near Highway 58 and 395, BLM lands east of Yucca Valley, or land managed by Edwards Air Force Base.

Some commenters also suggested the project should be considered in less populated areas to avoid the cumulative effects including impacts on wildlife, visual, and stress on natural resources such as water.

Some commenters suggested that the project should consider placing solar panels on rooftops, closer to the load source. Another commenter suggested the site be developed using windmills.

Project Description

Several commenters expressed concern about how the project would tie in to transmission lines and the cumulative need for additional transmission from the other renewable energy projects in the area. A commenter requested clarification regarding the use of Foothill Road transmission lines by the project and whether additional transmission poles would be added during the first or subsequent phases of the project. Concerns were raised about whether the project would plan to tie in to the proposed Los Angeles Department of Water and Power (LADWP) transmission line that some commenters stated is generally opposed by CDCA supporters and NGOs.

Commenters requested clarification of road plans; whether access roads would be paved; and, if any roads would be closed to the public, such as the Santa Fe Fire Trail. Concerns regarding dust mitigation methods were reiterated. Commenters expressed concern about water, specifically the source and the amount projected for construction and operation.

It was suggested that the project site be used for multiple purposes, such as constructing underground facilities to maximize the benefit if the land were going to be disturbed; for example, commenters expressed support for Chevron's rooftop design elements. It was also requested that the proposed CDCA Amendment be explained and clarified.

Purpose and Need

Commenters expressed concern over the purpose and need for the project to be on constructed on land described as undisturbed, instead of land that has been previously disturbed and graded with access to transmission. Other commenters expressed concern over impacts related to the project occurring near populated areas, and about cumulative impacts on the quality of life; commenters suggested moving the project to BLM lands in a more remote area. It was suggested the project consider using the land for multiple purposes (in addition to solar) to better justify disturbing desert lands described as pristine.

Commenters expressed concern over the proposed CDCA Plan Amendment and requested clarification on what it entails. It was suggested that BLM consider future reuse of the project to determine if the benefits of the project outweigh any long-term environmental impacts.

Aesthetics/Visual Resources

Commenters' concerns regarding visual resources focused on impacts to views and an overall concern that the cumulative impact from renewable energy projects proposed for the Mojave Desert, including wind and other solar projects. Additionally, some commenters were concerned that the project would be an "eye sore."

To avoid impacts to the visual quality of the project area some commenters suggested the project be moved to other BLM or privately-owned land that is already disturbed.

Air Quality

Concerns regarding air quality were focused primarily on dust resulting from the construction and operation of the project. Commenters expressed concern over dust mitigation and how the project would reduce impacts to air quality.

General concern was expressed about site clearing/grading methods to be used and the amount of dust that would be created. Another general concern involved the methods and materials that would be used to restore the site after construction and whether the project would take into account replacing the surface with native vegetation.

Biological Resources

Several comments were in regards to impacts the project would have on biological resources, primarily wildlife species. Cumulative impacts to wildlife habitat and migration patterns were a recurring concern among commenters. It was suggested that a great deal of projects planned along the 247 corridor could limit or completely cut off a migration route for some species. Concern was also expressed specifically in regards to impacts from the project on bighorn sheep habitat and migration.

It was suggested that the BLM conduct a study of the entire Mojave Desert, rather than program or project-specific studies, to determine cumulative impacts on wildlife species. It was also suggested that the BLM conduct wildlife connectivity studies of the entire Mojave Desert.

General concern was expressed regarding the sensitivity of the project area for desert tortoise. A concern about the creosote plant was raised and that a small reserve may be located in the project site. Commenters recommended the BLM ensure all biological resources surveys are conducted and mitigation is provided. Some commenters also recommended maximizing the use of the project and not disturbing more pristine habitat. Concern was raised over the radius for studies of cumulative impacts on bio resources.

Climate Change

Three comments were received pertaining to Climate Change. One comment requested that the DEIS should consider how climate change could potentially influence the proposed project, specifically within sensitive areas, and assess how the projected impacts could be exacerbated by climate change. One comment requested that the DEIS disclose the anticipated climate change benefits of solar energy and suggested quantifying greenhouse gas emissions from different types of generating facilities including solar, geothermal, natural gas, coal-burning, and nuclear and compiling and comparing these values. One comment requested that the DEIS discuss whether any trenching, grading, and filling associated with the construction of these projects and the installation of the solar arrays, will affect the deserts ability to store carbon, and to what degree this may occur.

Cultural Resources and Tribal Consultations

Four comments pertaining to cultural resources were received during the scoping meetings. The comments expressed concerns of the effect of the project on a possible future designation for Hwy 247 (Old Woman Springs Road) as a historic or scenic highway and that protection of cultural resources be the priority of the study with clear strategies outlined to minimize and mitigate impacts.

Native American concerns were also brought up in the scoping comments. One comment requested that the results of tribal government consultation be detailed in the DEIS along with how any issues that were raised were addressed in the selection of the proposed alternative. The other comment expressed that the DEIS should identify the existence of Native American sacred sites in the project areas, and that Executive Order 13007 be addressed and distinguished from Section 106 of the National Historic Preservation Act. Discussions should include how negative effects to sacred sites will be prevented, should sacred sites be found to exist within the project site. Summaries of all tribal, State Historic Preservation Officer, and Tribal Historic Preservation Officer coordination should be provided, as should the development of a Cultural Resource Management Plan.

In accordance with 40 CFR 1501.7, which requires that scoping must be conducted both internally with appropriate BLM staff and include tribes, the following tribes were given notice of the project as the first step in the consultation process:

- Fort Mohave Indian Reservation
- Colorado River Indian Tribes

Cumulative Impacts

A number of commenters were concerned about cumulative impacts on desert resources. Concerns about the cumulative impacts from alternative energy projects on quality of life in the desert was a repeated comment, specifically in regards to visual impacts and impacts to recreation. A summary of comments involving cumulative impacts is included in the summary for resources.

Environmental Justice

A commenter requested that the EIS identify environmental justice populations in the project area.

Geologic Resources

Concern was expressed about the area's concentrated geologic fault zones, whether the project's land would be stable, and whether the BLM would require a geological study. It was suggested the project prepare a water diversion mitigation plan to respond to the potential for flash flooding and to address erosion and other damage that could result.

Commenters expressed concern in regards water sources and whether the project would use water from local water systems or drill wells. In addition, a concern was raised over the accuracy of the project's projected water needs.

Growth Inducement

One commenter expressed concern that Draft Environmental Impact Statement (DEIS) should describe the reasonably foreseeable future land use and associated impacts that will result from the additional power supply. The document should also address the amount of growth, its likely location, and the biological and environmental resources at risk.

Hazardous Materials/Waste

One commenter stated that the Draft Environmental Impact Statement (DEIS) should address potential direct, indirect and cumulative impacts of hazardous waste from construction and operation. The commenter also stated that the DEIS should identify projected hazardous waste types and volumes, and expected storage, disposal, and management plan. There was also a comment that the proponent strive to address the full product life cycle, including PV panel manufacturing.

Hydrology, Water Quality and Water Resources

Commenters expressed concern about water and whether the project would use water from local water systems or drill wells; in addition, a concern was raised over the accuracy of the project's anticipated water needs.

Land Use

Commenters expressed concern about the use of land they described as undisturbed, instead of developing the project on previously disturbed land no longer considered "pristine." Concern was raised that SCE is taking advantage of transmission tie-in options. Concern was expressed that the Lucerne Valley is experiencing an influx of renewable energy projects that would cumulatively affect the quality of life, and the character and scenic quality of the desert.

It was suggested that BLM consider future reuse of the project to determine if the benefits of the project outweigh any long-term environmental impacts.

Additionally, a letter was jointly submitted by the Audubon Society (California), the California Wilderness Coalition, Defenders of Wildlife, the Desert Protective Council, the Mojave Desert Land Trust, the Natural Resources Defense Council, the Sierra Club, The Nature Conservancy, The Wilderness Society, and The Wildlands Conservancy that suggested renewable energy siting criteria for the California Desert Conservation Area. The letter detailed areas that should be prioritized for siting and high conflict areas that should be avoided when siting renewable energy projects.

Recreation

Several commenters expressed concern about how the project and cumulative projects would affect desert recreation.

Social and Economic Considerations

Commenters expressed concern that the project is being developed in an area that is not doing well economically. Though the project is supposed to generate money, the trade-off is the potential loss of pristine land and animal habitat for a questionable source of energy. Commenters were concerned whether there would be any economic benefits for Lucerne Valley in terms of tax revenue or donations from Chevron. It was suggested the BLM require a payment bond from the project to account for future restoration costs at and after decommissioning.

Concerns were raised in regards to the number of temporary and permanent workers that would be hired from Lucerne Valley and whether these workers would be hired locally.

Commenters inquired how much tax revenue the project, upon completion, would bring to Lucerne Valley and whether Chevron would provide monetary donations to Lucerne Valley. It was suggested that the BLM project the cost of restoring the land upon project decommissioning and incorporate that cost into the project. Additionally, commenters raised concerns about how the project will affect property values.

Soils

One commenter requested that soil resource issues be addressed early in the process through preparation of detailed drainage, erosion, sediment control plans in order to identify potential impacts and develop mitigation measures that would reduce impacts to a level of less than significant.

Transportation and Traffic

Commenters expressed concern about how the project will affect access to existing roads, specifically the Santa Fe Fire Trail. Concern was also raised about impacts that dust resulting from the project would affect travel on roads, and the actions the project would take to reduce dust, such as hardening the roads. Improvements to SH 247 were recommended.

Utilities

One commenter expressed concern about the source of water, the quantity of water and the potential impacts to the community water system. One commenter expressed concerns about the capacity of the existing transmission line, the proposed upgrades and net transmission loss.

One commenter requested information about the present load of the 33-Kv line, the plan to address transmission upgrades and whether or not these upgrades are included in the ROW application.

3.5 Issues Outside the Scope of the EIS

Some comments were received requesting addition to BLM project mailing lists or requesting copies of the project site map. Some commenters also requested that the BLM add them to the mailing list. One commenter recommended an environmental consulting firm for the BLM to consider hiring. Each of these requests have been satisfied and will not be addressed in the Draft EIS.

A comment was also received requesting that this project be evaluated as part of the Programmatic EIS being prepared by BLM and the U.S. Department of Energy, Energy Efficiency and Renewable Energy Program the Solar Energy Development Program for utility-scale solar energy development in six western states (Arizona, California, Colorado, New Mexico, Nevada, and Utah). In response to public interest in solar energy development, the BLM announced in July 2008 that it planned to continue accepting applications for future potential solar development on the public lands, while the programmatic Environmental Impact Statement (PEIS) is being prepared.

Additionally, two comments were received that appeared to be scams. These comments were irrelevant and will not be addressed in the Draft EIS.

Table 1 Summary of all Comments Received (by topic)

Resource/Issue	Comment	Commenter
AESTHETICS/VISUAL RESOURCES		
Visual Resources	AE1: I'm a hunter/conservationist and I've been on top of all these mountains and I enjoy the view and don't know that it's going to be the same with windmills on the ridges and mirrors reflecting skyward.	Gary Hatfield, member of the Society for Conservation of Bighorn Sheep, Lucerne Valley, 7/29/09
	AE2: I am pleased that they're low profile. Another proposal north of town here was 300 foot tall solar panels on thousands of acres which would look like the New York skyline. So I'm happy about that.	Roger Peterson, affiliated with myjeeprocks.com, Lucerne Valley, 7/29/09
	AE3: And this place is going to be disgusting if it looks like Tehachapi or Desert Hot Center, Desert Hot Springs. That's what it's going to look like if the federal government allows all these projects that are proposed to come in.	Roger Peterson, affiliated with myjeeprocks.com, Lucerne Valley, 7/29/09
	AE4: I'm just thinking that you guys ought to look at other areas and less populated areas and if, you know, you want to live in Tehachapi with the wind mills or over in Desert Hot Springs with the wind mills over there and look out your window and just see whoosh, whoosh. Well I don't want to see it.	Jim Meshard, Lucerne Valley, 7/29/09
	AE5: The Draft EIS should consider impacts to wildlife, including the desert tortoise, along with the impacts to the scenic visual landscape between Lucerne Valley and Yucca Valley, including the Johnson Valley OHV [Off-Highway Vehicle] area.	Brendan Hughes, Joshua Tree, 7/25/09
	AE6: Visual impact counts! The rural communities and the open spaces surrounding them are the goal of many who leave the urban sprawl behind for recreation in the desert. The rural communities depend in large measure on the tourist dollar, as does the county, as does the state.	Betty Munson, Johnson Valley, 8/22/09
Visual Analysis	AE7: The BLM and Chevron Energy Solutions should continue to collaborate on a visual analysis conforming to BLM regulations to address concerns identified in during the scoping period.	The Wilderness Society, 8/21/09
Scenic Roads	AE8: OLD WOMAN SPRINGS RD. (SR 247) is a County Scenic Route…The process is under way to have SR247, from Yucca Valley through Lucerne Valley and up to Barstow, designated as a California Scenic Highway… The fact that this proposed solar project may not be visible in its entirety from Old Woman Spring Rd. (SR247) does not negate the fact that it is just the first solar proposal to get to the Public Scoping stage.	Betty Munson, Johnson Valley, 8/22/09
General – Visual Resources	AE9: [The following is a response to the question on the comment form, “What issues should be addressed in this environmental document?”] The… visual impact…	Charlene Claybaugh, affiliated with the Johnson Valley Improvement Association, Lucerne Valley, 7/29/09
	AE10:: [The following is a response to the question on the comment form, “What issues should be addressed in this environmental document?”] eye sore	M Diane Hunnicult, Lucerne Valley, 7/29/09
	AE11: [The following is a response to the question on the comment form, “What issues should be addressed in this environmental document?”] Eye sore	Juanita Crouse, Lucerne Valley, 7/29/09

Table 1 Summary of all Comments Received (by topic)

Resource/Issue	Comment	Commenter
AIR QUALITY		
Dust Generation/ Dust Control	AQ1: One big concern, okay, you guys get this thing put in, get it up and operating, what about the dust? You guys are going to be opening up over 500 acres. How much of that is going to be re-covered and resealed with the fungus that naturally grows out here under the topsoil or just under the top layer. I'd like to know how you guys would be dealing with that because we get some hellacious easterly prevailing winds in here and you look at, you look north of town you can just see the dust clouds go across the desert.	Jeff Arnold, Lucerne Valley, 7/29/09
Dust Generation/ Dust Control	AQ2: My question is, have you guys even studied how many tons of dust or dirt will be blowing after you guys get this completed?	Jeff Arnold, Lucerne Valley, 7/29/09
	AQ3: I share the concern of the gentleman before me about the dust (see AQ1 and AQ2). And I'm also concerned about the dust on the road. For example, on Santa Fe Trail Road. Is that going to be hardened so that there will be no dust provided there so that you'll still have access or will some of the access be curtailed because of dust?	Harry Baker, representing the Partnership of Johnson Valley and affiliated with CA4WDC, Lucerne Valley, 7/29/09
	AQ4: And also, further on down the line that the dust that is generated by the cement plants and that, will that have an impact on the solar plants?	Harry Baker, representing the Partnership of Johnson Valley and affiliated with CA4WDC, Lucerne Valley, 7/29/09
	AQ5: Now are you going to have paved roadways for access between there or are you going to leave it dirt? That would be something that I think the BLM needs to look at very closely for air quality.	Roger Peterson, affiliated with myjeeprocks.com, Lucerne Valley, 7/29/09
	AQ6: Of course, quality, the air quality is the big concern. We have lots of land, little water and probably promise of a lot less with climate change coming in. So air quality and dust mitigation are always a big concern on these.	Claudia Sall, affiliated with the California Desert Coalition, Lucerne Valley, 7/29/09
	AQ7: De-brushing/grading will create a long-term dust source, adversely affecting the facility and down-wind receptors. Minimal grading, vegetation mowing, and placement of decomposed granite or small gravel will help to stabilize the site and reduce weed infestations—as well as enhance native re-vegetation if and when facilities are removed.	Chuck Bell, representing the Lucerne Valley Economic Development Association (LVEDA), Lucerne Valley, 8/03/09
	AQ8: Also have some concerns and questions about the, if you're going to be blading the land or if it's going to be mowed, what the water usage will be and dust mitigation issues.	April Sall, representing the Wildlands Conservancy and the California Desert Coalition, Lucerne Valley, 7/29/09
	AQ9: Santa Fe Fire Rd. should be paved or at least graveled—benefits local residents and eliminates a dust source.	Chuck Bell, representing LVEDA, Lucerne Valley, 8/03/09
	AQ10: What will be done to mitigate the effects of blowing dust and sand when the project site has been disturbed?	Dennis Pond, Lucerne Valley, 08/03/09
	AQ11: I'm concerned about the dust on the road. For example, on Santa Fe Trail Road. Is that going to be hardened so that there will be no dust provided there so that you'll still have access or will some of the access be curtailed because of dust?	Harry Baker, representing the Partnership of Johnson Valley and affiliated with CA4WDC, Lucerne Valley, 7/29/09

Table 1 Summary of all Comments Received (by topic)

Resource/Issue	Comment	Commenter
AIR QUALITY (Continued)		
Dust Generation/ Dust Control	AQ12: Fugitive Dust Control Plan—The Draft EIS (DEIS) should identify the need for Fugitive Dust Control Plan. We recommend that it include these general recommendations: ▪ Stabilize open storage piles and by covering and/or applying water or chemical/organic dust palliative where appropriate. This applies to both inactive and active sites, during workdays, weekends, holidays, and windy conditions. ▪ Install wind fencing and phase grading operations where appropriate and operate water trucks for stabilization of surfaces under windy conditions; and ▪ When hauling material and operation non-earthmoving equipment, prevent spillage and limit speeds to 15 mph. Limit speed of earth-moving equipment to 10 mph.	Environmental Protection Agency (EPA), 08/04/09
Greenhouse Gas	AQ13: The greenhouse gases produced by building a solar project at a remote site, as opposed to rooftop solar or closer to population centers, should be considered in the analysis of the project.	Brendan Hughes, Joshua Tree, 7/25/09
	AQ14: The BLM should comprehensively analyze the Lucerne Valley Solar Project's net reductions to GhG emissions, including GhG emissions during manufacture, construction, operation, decommissioning, and reclamation of the project site. The analysis should consider both the potential for the project to reduce GhG emissions as well as potential for the project to increase GhG emissions, for example, by disturbing undisturbed land currently useful for carbon sequestration. The results of this analysis should then be compared to the same type of analysis for fossil-fuel based energy production, including combined-cycle natural gas fired and coal fired power plants.	The Wilderness Society, 8/21/09
General Air Quality	AQ15: Of course, quality, the air quality is the big concern.	Claudia Sall, affiliated with the California Desert Coalition, Lucerne Valley, 7/29/09
	AQ16: The DEIS should provide a detailed discussion of ambient air conditions (baseline or existing conditions), National Ambient Air Quality Standards (NAAQS), criteria pollutant nonattainment areas, and potential air quality impacts of the proposed projects (including cumulative and indirect impacts). Such an evaluation is necessary to assure compliance with State and Federal air quality regulations, and to disclose the potential impacts from temporary or cumulative degradation of air quality.	EPA, 08/04/09
	AQ17: The DEIS should describe and estimate air emissions from potential construction and maintenance activities, as well as proposed mitigation measures to minimize those emissions.	EPA, 08/04/09
	AQ18: Existing Conditions – The DEIS should provide a detailed discussion of ambient air conditions, NAAQS, and criteria pollutant nonattainment areas in all areas considered for solar development.	EPA, 08/04/09

Table 1 Summary of all Comments Received (by topic)

Resource/Issue	Comment	Commenter
AIR QUALITY (Continued)		
General Air Quality	AQ19: Quantify Emissions – The DEIS should estimate emissions of criteria pollutants from the proposed projects and discuss the timeframe for release of these emissions over the lifespan of the projects. The DEIS should describe and estimate emissions from potential construction activities, as well as proposed mitigation measures to minimize these emissions.	EPA, 08/04/09
	AQ20: Specify Emission Sources – The DEIS should specify the mission sources by pollutant from mobile sources, stationary sources, and ground disturbance. This source specific information should be used to identify appropriate mitigation measures and areas in need of the greatest attention.	EPA, 08/04/09
	AQ21: Equipment Emission Mitigation Plan (EEMP) – The DEIS should identify the need for an EEMP. An EEMP will identify actions to reduce diesel particulate, carbon monoxide, hydrocarbons, and NOx associated with construction activities. We recommend that the EEMP require that all construction-related engines: ▪ Are tuned to the engine manufacturer's specification in accordance with an appropriate time frame; ▪ Do not idle for more than five minutes (unless, in the case of certain drilling engines, it is necessary for the operating scope); ▪ Are not tampered within order to increase engine horsepower; ▪ Include particulate traps, oxidation catalysts and other suitable control devices on all construction equipment used at the project sites; ▪ Use diesel fuel have a sulfur content of 15 parts per million or less, or other suitable alternative diesel fuel, unless such fuel cannot be reasonably procured in the market area; and ▪ Include control devices to reduce air emissions. The determination of which equipment is suitable for control devices should be made by an independent Licensed Mechanical Engineer. Equipment suitable for control devices may include drilling equipment, generators, compressors, graders, bulldozers, and dump trucks.	EPA, 08/04/09

Table 1 Summary of all Comments Received (by topic)

Resource/Issue	Comment	Commenter
BIOLOGICAL RESOURCES		
Impacts on Vegetation	BIO1: And although the gentleman said it was brown out there one of the oldest living plants, the Creosote plant lives out here. It has a small reserve and it's covered in this, where this project is being sited.	Claudia Sall, affiliated with the California Desert Coalition, Lucerne Valley, 7/29/09
Impacts on Wildlife	BIO2: Disturbance of desert vegetation to construct project could affect animals.	Dan Musetti, affiliated with Hemet Ranch, San Bernardino, 7/30/09
	BIO3: [Bighorn] Sheep may need to migrate from one range to another. If you fill up the BLM land with industrial complexes then it's going to be more difficult to do.	Gary Hatfield, member of the Society for Conservation of Bighorn Sheep, Lucerne Valley, 7/29/09
	BIO4: And over in that area [proposed project site]. I ride my motorcycle and stuff over there and things and I've seen Kangaroo Rats over there. I've seen tortoises over there. I've seen other animals that, you know, I've seen the goats and the bobcats come down. What is this going to do to them?	Jim Meshard, Lucerne Valley, 7/29/09
	BIO5: The BLM has not done any wildlife connectivity studies. They're being left to private non-profits to do. So we really don't know what the movement is that's going to be interrupted by this first solar project. And looking at your solar programmatic you're planning a lot more along this 247 corridor. And so basically you may be cutting off a whole corridor there and not even knowing until after the facts.	Claudia Sall, affiliated with the California Desert Coalition, Lucerne Valley, 7/29/09
	BIO6: The BLM should prioritize protection of species in the project proposal area by further analyzing potential impacts and developing Best Management Practices and steps to minimize and mitigate any unavoidable impacts.	The Wilderness Society, 8/21/09
	BIO7: You should find out about wildlife use of that area and consider how valuable that land might be in the future.	Gary Hatfield, member of the Society for Conservation of Bighorn Sheep, Lucerne Valley, 7/29/09
	BIO8: Those of us who have built on private property have had to consider wildlife habitat in our construction. What will be done to protect the desert tortoise, big horn sheep, cougars, desert fox and coyotes? Because the project site is BLM land, and the federal government has a vested interest in its construction, will these concerns be considered, or swept under some rug?	Dennis Pond, Lucerne Valley, 08/03/09
	BIO9: We are gathering information to fight this plan and one of our questions is regarding the round tail squirrel is on the endangered species list.	Ramona Doles, representing the Homeowners of Newberry Springs, 8/1/09

Table 1 Summary of all Comments Received (by topic)

Resource/Issue	Comment	Commenter
BIOLOGICAL RESOURCES (Continued)		
Impacts on Wildlife- Desert Tortoise	BIO10: First thing is, what is the category now for Desert Tortoise in this area? Is it density category 3, 4, category 1?	Alan Manee, San Bernardino, 7/30/09
	BIO11: Is there any occurrence or findings of [Desert Tortoise] burrows on the side at all?	Alan Manee, San Bernardino, 7/30/09
	BIO12: What is the category for this property in terms of the occurrence of Desert Tortoise?	Alan Manee, San Bernardino, 7/30/09
	BIO13: The Draft EIS should consider impacts to wildlife, including the desert tortoise.	Brendan Hughes, Joshua Tree, 7/25/09
Mitigation	BIO14: Make sure that any of the biological resources surveys and any mitigation would be handled.	D'Anne Albers, representing Defenders of Wildlife and the Sierra Club Desert Committee Energy Committee, Lucerne Valley, 7/29/09
Habitat impacts and mitigation	BIO15: The DEIS should identify all petitioned and listed threatened and endangered species and critical habitat that might occur within the project area. The document should identify and quantify which species or critical habitat might be directly, indirectly, or cumulatively affected by each alternative and mitigate impacts to these species. Emphasis should be placed on the protection and recovery of species due to their status or potential status under the Endangered Species Act. We recommend that the BLM Consult with the U.S. Fish and Wildlife Service and prepare a Biological Opinion under Section 7 of the ESA if there are threatened or endangered species present. The DEIS should provide a recent status update of this report if this action has been or will be undertaken. Analysis of impacts and mitigation on covered species should include: ▪ Baseline conditions of habitats and populations of the covered species; ▪ A clear description of how avoidance, mitigation, and conservation measures will protect and encourage recovery of covered species and their habitats in project area; ▪ Monitoring, reporting and adaptive management efforts to ensure species and habitat conservation effectiveness.	EPA, 08/04/09
	BIO16: The DEIS should indicate what measures will be taken to protect important wildlife habitat areas from potential adverse effects of proposed covered activities.	EPA, 08/04/09
Habitat impacts and mitigation	BIO17: The proposed solar project at Lucerne Valley should be denied permits, etc. and not allowed to be built and regulated against because of the excessive amount of damage that would be caused by all the activity and destruction of habitat in this region. The fragility of this desert region is extremely hard to ever repair if at all and fragmenting it is really destructive.	Kim Bauer, Unknown, 08/17/09
Increased shading impacts	BIO18: The DEIS should discuss the impacts associated with an increase of shade in the desert environment on vegetation and/or species.	EPA, 08/04/09

Table 1 Summary of all Comments Received (by topic)

Resource/Issue	Comment	Commenter
BIOLOGICAL RESOURCES (Continued)		
Project Fencing	BIO19: The DEIS should discuss the impacts associated with constructing fences around the project site(s), and consider whether there are options that could facilitate better protection of covered species.	EPA, 08/04/09
Invasive plants	BIO20: The DEIS should include an invasive plant management plan to monitor and control noxious weeds.	EPA, 08/04/09
Mitigation	BIO21: Right now you're just ballpark estimate would be there'd be minor mitigation for the removal of those [Desert Tortoise] species and maybe any plant species that you've located. So you're not anticipating a great deal of mitigation on this property at this point.	Alan Manee, San Bernardino, 7/30/09
CLIMATE CHANGE		
Climate Change Impacts	CC1: The DEIS should consider how climate change could potentially influence the proposed project, specifically within sensitive areas, and assess how the projected impacts could be exacerbated by climate change.	EPA, 08/04/09
Climate Change Benefits	CC2: The DEIS should quantify and disclose the anticipated climate change benefits of solar energy. We suggest quantifying greenhouse gas emissions from different types of generating facilities including solar, geothermal, natural gas, coal-burning, and nuclear and compiling and comparing these values.	EPA, 08/04/09
Carbon Storage	CC3: The DEIS should discuss whether any trenching, grading, and filling associated with the construction of these projects and the installation of the solar arrays, will affect the deserts ability to store carbon, and to what degree this may occur.	EPA, 08/04/09
CULTURAL RESOURCES		
Historic/Scenic Designation of Hwy 247	CR1: Effect on a possible future "historic/scenic" designation for Hwy 247 (Old Woman Springs Rd.)	Chuck Bell representing LVEDA, Lucerne Valley, 08/03/09
Tribal Consultations/Coordination Potential Indian sacred sites in project areas	CR2: The DEIS should describe the process and outcome of government-to-government consultation between the BLM and each of the tribal governments within the project area, issues that were raised (if any), and how those issues were addressed in the selection of the proposed alternative.	EPA, 08/04/09
	CR3: The DEIS should address the existence of Indian sacred sites in the project areas. It should address Executive Order 13007, distinguish it from Section 106 of the NHPA, and discuss how the BLM will avoid adversely affecting the physical integrity of sacred sites, if they exist. The DEIS should provide a summary of all coordination with tribes and with the State Historic Preservation Officer/Tribal Historic Preservation Officer, including identification of National Register of Historic Places eligible sites, and development of a Cultural Resource Management Plan.	EPA, 08/04/09
Protection of Cultural Resources	CR4: BLM should prioritize protection of the area's cultural resources, including study of the area's resources, development of strategies to minimize and mitigate impacts, and ongoing engagement in consultation with local Native American tribes.	The Wilderness Society, 8/21/09

Table 1 Summary of all Comments Received (by topic)

Resource/Issue	Comment	Commenter
CUMULATIVE IMPACTS		
General	CI1: We are concerned about the cumulative impacts.	D'Anne Albers, representing Defenders of Wildlife and the Sierra Club Desert Committee Energy Committee, Lucerne Valley, 7/29/09
	CI2: I'm concerned about the cumulative effect. You know if this was a stand alone project I'd be all for it. You can't see it from until you're right on top of it on the highway, Santa Fe Fire Road is open to give us access into the land behind it but the problem is BLM is the cumulative effect of all these projects.	Roger Peterson, affiliated with myjeeprocks.com, Lucerne Valley, 7/29/09
	CI3: We're all concerned about these cumulative effects that are on, keep speaking about.	Claudia Sall, affiliated with the California Desert Coalition, Lucerne Valley, 7/29/09
	CI4: I think right now, and I've lost count, and I know BLM, like any other state or federal agency has regions and areas, I'm not sure where you go but this I think 36, if we take the deserts of Southern California, I think there's 36 active projects right now of similar or other type of facility, not necessarily all solar. And I'm just concerned how that plays out in the big picture.	Alan Manee, San Bernardino, 7/30/09
	CI5: We have urged that you do a full cumulative study of the desert and not just the solar programmatic to include things like the Ivanpah Airport and some of the wind projects and some of the really developments that are happening in the California desert. And that hasn't been done. And so we're piece-mealing that. And we're very concerned about that.	Claudia Sall, affiliated with the California Desert Coalition, Lucerne Valley, 7/29/09
	CI6: I don't think you can remove the cumulative effect of all of these proposals and this land rush and this race for renewable energy.	Gary Hatfield, member of the Society for Conservation of Bighorn Sheep, Lucerne Valley, 7/29/09
	CI7: Cumulative impacts (environmental, socio-economic, traffic, visual, etc.) from this and all other proposed projects proposed for the Lucerne Valley/Johnson Valley region – (i.e.: LADWP's GPN transmission line, Granite Mt. Wind, Fry Mt. Wind, Edison Solar, Cannon Solar, 29 Palms Marine Base expansion, etc.).	Chuck Bell, representing LVEDA, Lucerne Valley, 08/03/09
	CI8: Problems created by solar fields such as dust, wildlife impacts, and flooding stand to destroy the desert environment.	Cynthia Anderson, Yucca Valley, 8/8/09
	CI9: The DEIS should consider the cumulative impacts associated with multiple large-scale solar projects proposed in the desert southwest and the potential impacts on various resources including: water supply, endangered species, and habitat.	EPA, 08/04/09
	CI10: If even two of these proposed [renewable energy] projects start construction at the same time – related traffic through town will become a major impact that must be mitigated.	Chuck Bell, representing LVEDA, Lucerne Valley, 08/03/09

Table 1 Summary of all Comments Received (by topic)

Resource/Issue	Comment	Commenter
CUMULATIVE IMPACTS (Continued)		
General	CI11: The cumulative impacts analysis should provide the context for understanding the magnitude of the impacts of the alternatives by analyzing the impacts of other past, present, and reasonably foreseeable projects or actions and then considering those cumulative impacts in their entirety (CEQ's Forth Questions, #18). The DEIS should clearly identify the resources that may be cumulatively impacted, the time over which impacts are going to occur, and the geographic area that will be impacted by the proposed projects. The DEIS should focus on resources of concern- those resources that are "at risk" and/or are significantly impacted by the proposed projects, before mitigation. In the introduction to the Cumulative Impacts Section, identify which resources are analyzed, which ones are not, and why. For each resource analyzed, the DEIS should: ▪ The DEIS should identify the current condition of the resource as a measure of past impacts. For example, the percentage of species habitat lost to date. ▪ Identify the trend in the condition of the resource as a measure of present impacts. For example, the health of the resource is improving, declining, or in stasis. ▪ Identify all on-going, planned, and reasonably foreseeable projects in the study area that may contribute to cumulative impacts. ▪ Identify the future condition of the resource based on an analysis of impacts from reasonably foreseeable projects or actions added to existing conditions and current trends. ▪ Assess the cumulative impacts contribution of the proposed alternatives to the long-term health of the resource, and provide a specific measure for the projected impact from the proposed alternatives. ▪ Disclose the parties that would be responsible for avoiding, minimizing, and mitigating those adverse impacts. ▪ Identify opportunities to avoid and minimize impacts, including working with other entities.	EPA, 08/04/09
	CI12: I think we're [,]as many of the other people have said [,] we're unduly over-impacted by all of these so-called wonderful solar and other projects. They're talking about building like 100 foot tall solar mirrors out here just to a little north of here. And then they're thinking about putting windmills in another area. And now they're planning of putting this here.	Jim Meshard, Lucerne Valley, 7/29/09

Table 1 Summary of all Comments Received (by topic)

Resource/Issue	Comment	Commenter
CUMULATIVE IMPACTS (Continued)		
General	CI13: There's great concern over LADWP's proposed Green Path North Project. A 500 kV transmission line that is proposed along the contingent corridor and the California Desert Conservation Area that has many solar proposals and a few wind proposals along its alignment through the high desert here and from Morongo Valley, actually Desert Hot Springs, out to Hesperia. And so any projects that would possibly facilitate that transmission line are of great concern and of opposition to many of the groups here.	April Sall, representing the Wildlands Conservancy and the California Desert Coalition, Lucerne Valley, 7/29/09
	CI14: Impact on Mojave Water Agency's Morongo Pipeline.	Chuck Bell representing LVEDA, Lucerne Valley, 08/03/09
	CI115: There are rumors of multiple energy-producing projects in this area, sponsored and constructed by various private and government agencies. There doesn't seem to be a great deal of concern for the cumulative effects these projects are apt to have on the quality of life for residents living in Lucerne Valley now. Unsightly wind turbines on every ridge and transmission lines crisscrossing the valley at multiple angles are not aesthetic additions to the natural scenery.	Dennis Pond, Lucerne Valley, 08/03/09
	CI16: I don't think you can remove the cumulative effect of all of these proposals and this land rush and this race for renewable energy. And it kind of saddens me because this is so obviously facilitation of development, the pressure coming from, you know, our elected leaders and so forth at a time when much of the world has no desire to cut back on their CO2 emissions. They're developing their economy. And we're kind of standing alone in our economy isn't doing that well. And we're going to trade off, as the other gentleman says, this real treasure of the public land resource and animals that inhabit it for our future for a questionable source of energy.	Gary Hatfield, member of the Society for Conservation of Bighorn Sheep, Lucerne Valley, 7/29/09
	CI17: The general discussion about cumulative impacts of these projects as you're well aware there is a land rush in the California Desert for over 1.7 million acres depending on which spreadsheets you're looking at for the BLM.	April Sall, representing the Wildlands Conservancy and the California Desert Coalition, Lucerne Valley, 7/29/09
Renewable Energy	CI18: I'm with the Partnership of Johnson Valley. We are concerned about the cumulative impact of all the different projects that are hitting the desert, the wind generating plants, the solar plants, all of them and the effect they will have on recreation and on the quality of life in the desert.	Harry Baker, representing the Partnership of Johnson Valley and affiliated with CA4WDC, Lucerne Valley, 7/29/09
Cumulative Analysis Study Area	CI19: In the implementation and process of carrying out the responsibilities of BLM do you -- are you required, I know you are generally under NEPA, but are you required to look how far out that cumulative impacts could occur from other types of facilities or other types of proposed development as it addresses this site? Are you required to go out a certain number of feet, miles, kilometers, whatever it is, to evaluate any other associated impacts?	Alan Manee, San Bernardino, 7/30/09

Table 1 Summary of all Comments Received (by topic)

Resource/Issue	Comment	Commenter
CUMULATIVE IMPACTS (Continued)		
Visual Resources	CI20: I've been on top of all these mountains and I enjoy the view and don't know that it's going to be the same with windmills on the ridges and mirrors reflecting skyward.	Gary Hatfield, member of the Society for Conservation of Bighorn Sheep, Lucerne Valley, 7/29/09
Groundwater Supply	CI21: DEIS should include a discussion of cumulative impacts to groundwater supply within the hydrographic basin, including impacts from other large-scale solar installations that have also been proposed.	EPA, 08/04/09
ENVIRONMENTAL JUSTICE		
Environmental Justice Populations	EJ1: The DEIS should include an evaluation of environmental justice populations within the geographic scope of the projects. If such populations exist, the DEIS should address the potential for disproportionate adverse impacts to minority and low-income populations, and the approaches used to foster public participation bye these populations. Assessment coordination with those affected populations.	EPA, 08/04/09
GEOLOGIC RESOURCES		
Seismic Activity	GEO1: Also the Mojave Desert is riddled with earthquake faults so I'm just curious, you know, if the BLM is going to require a geological study of the area to make sure that it's stable enough. We have a lot of unstable land out here.	Roger Peterson, affiliated with myjeeprocks.com, Lucerne Valley, 7/29/09
Geologic Stability	GEO2: How big an issue is geologic stability? The epicenter for the Landers Earthquake is only about 30 miles east of the site.	Dennis Pond, Lucerne Valley, 08/03/09
GROWTH INDUCEMENT		
	GI1: The DEIS should describe the reasonably foreseeable future land use and associated impacts that will result from the additional power supply. The document should provide an estimate of the amount of growth, its likely location, and the biological and environmental resources at risk.	EPA, 08/04/09
HAZARDOUS WASTES		
Impacts of hazardous waste from construction/operation	HAZ1: The DEIS should address potential direct, indirect and cumulative impacts of hazardous waste from construction and operation. The document should identify projected hazardous waste types and volumes, and expected storage, disposal, and management plans. It should address the applicability of state and federal hazardous waste requirement. Appropriate mitigation should be evaluated, including measures to minimize the generation of hazardous waste (i.e., hazardous waste minimization). Alternate industrial processes using less toxic materials should be evaluated as mitigation. This potentially reduces the volume or toxicity of hazardous materials requiring management and disposal as hazardous waste.	EPA, 08/04/09

Table 1 Summary of all Comments Received (by topic)

Resource/Issue	Comment	Commenter
HAZARDOUS WASTES (Continued)		
Address full product life cycle of project	HAZ2: EPA recommends that the proponent strive to address the full product life cycle by sourcing PV components from a company that 1) minimizes environmental impacts during raw material extraction; 2) manufactures PV panels in a zero waste facility; and 3) provides future PV disassembly for material recovery for reuse and recycling.	EPA, 08/04/09
HYDROLOGY, WATER QUALITY AND WATER RESOURCES		
Flash Flood Potential	HWR1: What protections will be provided against flash-flooding? Thunderstorms are frequent enough in the mountains to the south as well as in the project area itself to assume this will be an issue during the life of the project.	Dennis Pond, Lucerne Valley, 08/03/09
	HWR2: The studies they should be looking at that area over there [proposed project site] is prone to flash flooding. I mean flash flooding enough to close the highway. And so now you're going to take 500 acres and try to divert the water around that. Your plans need to show how you're going to mitigate that, the potential for flash flood and erosion and damage that that will cause okay.	Roger Peterson, affiliated with myjeeprocks.com, Lucerne Valley, 7/29/09
Water Resources/Water Sources/Water Quality	HWR3: The proposed project is anticipating use of 10,000 gallons of water annually. This doesn't seem realistic to local residents. Where will the water come from?	Dennis Pond, Lucerne Valley, 08/03/09
	HWR4: Fox News did an investigation into the cost of upkeep and maintenance of the Solar Collection Panels that are used to collected the Suns Solar Energy. In their report they stated that these Panels need to be cleaned on a regular basis in order to operate effectively and that cleaning them Requires a Large Amounts of Water! The High Desert is in a very bad drought. We can't afford to use our scarce water to clean Your Solar Panels.	Steven Beavers, Barstow, 7/17/09
	HWR5: How is the water being provided? Does the ROW include well-drilling? If so, will these wells be metered?	Claudia Sall, affiliated with the California Desert Coalition, Lucerne Valley, 8/3/09
	HWR6: The Town of Apple Valley requests that BLM identify within the EIS any impacts related to water resources and water quality.	Carol Miller, Town of Apple Valley, 8/11/09
	HWR7: DEIS should include a discussion of the amount of water needed for the proposed solar PV generation facility and where this water will be obtained.	EPA, 08/04/09
	HWR8: DEIS should include a discussion of availability of groundwater within the basin and annual recharge rates.	EPA, 08/04/09
	HWR9: DEIS should include an analysis of different types of technology that can be used to minimize or recycle water.	EPA, 08/04/09
	HWR11: [We are] also [concerned about] water use.	D'Anne Albers, representing Defenders of Wildlife and the Sierra Club Desert Committee Energy Committee, Lucerne Valley, 7/29/09
	HWR12: BLM should gather additional information to confirm that the water needed for the Lucerne Valley Solar Project will be available as well as that the source of the needed water will conform to all laws, ordinances, regulations and standards (LORS).	The Wilderness Society, 8/21/09

Table 1 Summary of all Comments Received (by topic)

Resource/Issue	Comment	Commenter
HYDROLOGY, WATER QUALITY AND WATER RESOURCES (Continued)		
Water Rights	HWR13: DEIS should include a description of the water right permitting process and the status of water rights within that basin, including an analysis of whether water rights have been over-allocated.	EPA, 08/04/09
Feasibility of using alternative water sources	HWR14: DEIS should include a discussion of whether it would be feasible to use other sources of water, including potable water, wastewater or deep-aquifer water.	EPA, 08/04/09
Project Discharges	HWR15: The DEIS should address the potential effects of project discharges, if any, on surface water quality. Specific discharges should be identified and potential effects of discharges on designated beneficial uses of affected waters should be analyzed. If the facility is a zero discharge facility, the DEIS should disclose the amount of process water that would be disposed of onsite and explain methods of onsite containment.	EPA, 08/04/09
Potential need for CWA 404 Permit	HWR16: The project applicant should coordinate with the U.S. Army Corps of Engineers (Corps) to determine if the proposed project requires a Section 404 permit under the Clean Water Act. Section 404 regulates the discharge of dredged or fill material into waters of the United States (WOUS), including wetlands and other special aquatic sites. The DEIS should describe all WOUS that could be affected by the project alternatives, and include maps that clearly identify all waters within the project area. The discussion should include acreages and channel lengths, habitat types, values, and functions of these waters. In addition, EPA suggests that the BLM include a jurisdictional delineation for all WOUS, including ephemeral drainages, in accordance with the 1987 Corps of Engineers Wetlands Delineation Manual and the December 2006 Arid West Region Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region. A jurisdictional delineation will confirm the presence of WOUS in the project area and help determine impact avoidance or if state and federal permits would be required for activities that affect WOUS.	EPA, 08/04/09
	HWR17: If a permit is required, EPA will review the project for compliance with Federal Guidelines for Specification of Disposal Sites for Dredged or Fill Materials (40 CFR 230), promulgated pursuant to Section 404(b)(1) of the Clean Water Act ("404(b)(1)Guidelines"). Pursuant to 40 CFR 230, any permitted discharge into WOUS must be the least environmentally damaging practicable alternative available to achieve the project purpose. The DEIS should include an evaluation of the project alternatives in this context in order to demonstrate the project's compliance with the 404(b) (1) Guidelines. If, under the proposed project, dredged or fill material would be discharged into WOUS the DEIS should discuss alternatives to avoid those discharges	EPA, 08/04/09

Table 1 Summary of all Comments Received (by topic)

Resource/Issue	Comment	Commenter
HYDROLOGY, WATER QUALITY AND WATER RESOURCES (Continued)		
Site Drainage	HWR18: The DEIS should describe the original (natural) drainage patterns in the project locale, as well as the drainage patterns of the area during project operations, and identify whether any components of the proposed project are within a 50 or 100-year floodplain. We also recommend the DEIS include information on the functions and locations of WOUS, as well as ephemeral washes in the project area, because of the important hydrologic and biogeochemical role these play in direct relationship to higher-order waters downstream.	EPA, 08/04/09
	HWR19: You don't have any real drainages, per se. Is that correct?	Alan Manee, San Bernardino, 7/30/09
Water Quality	HWR20: The DEIS should provide information on Clean Water Act Section 303(d) impaired waters in the project area, if any, and efforts to develop and revise TMDLs. The DEIS should describe existing restoration and enhancement efforts for those waters, how the proposed project will coordinate with on-going protection efforts, and any mitigation measures that will be implemented to avoid further degradation of impaired waters.	EPA, 08/04/09
Water Use for Dust Mitigation	HWR21: Also have some concerns and questions about the, if you're going to be blading the land or if it's going to be mowed, what the water usage will be and dust mitigation issues.	April Sall, representing the Wildlands Conservancy and the California Desert Coalition, Lucerne Valley, 7/29/09
General - Water	HWR22: [The following is a response to the question on the comment form, "What issues should be addressed in this environmental document?"] The impact of water…	Charlene Claybaugh, affiliated with the Johnson Valley Improvement Association, Lucerne Valley, 7/29/09
	HWR23: [The following is a response to the question on the comment form, "What issues should be addressed in this environmental document?"] uses to much water	M Diane Hunnicult, Lucerne Valley, 7/29/09
Water Use for Maintenance	HWR24: [The following is a response to the question on the comment form, "What issues should be addressed in this environmental document?"] additional use of water for maintenance	Dawn Tonioli, Lucerne Valley, 7/29/09
LAND USE		
Consistency with adopted land use plans	LU1: The DEIS should discuss how the proposed action would support or conflict with the objectives of federal, state, tribal or local land use plans, policies and control in the project areas. The term "land use plans" includes all types of formally adopted documents for land use planning, conservation, zoning and related regulatory requirements. Proposed plans not yet developed should also be addressed it they have been formally proposed by the appropriate government body in a written form (CEQ's Forty Questions, #23b).	EPA, 08/04/09

Table 1 Summary of all Comments Received (by topic)

Resource/Issue	Comment	Commenter
LAND USE (Continued)		
Use of public lands for renewable energy generation	LU2: Industrial-scale installations on public lands are a questionable use of multi-use lands. The study must address the uglification effect of this first installation: the effect on the values of surrounding private lands; causing the easily foreseeable sale of private lands and permitting of other public lands for other renewable energy installations; and the negative impact that this proliferation and inevitable transmission lines will have on the scenic/historic route from which they will be visible.	Betty Munson, Johnson Valley, 08/22/09
Disturbed Lands	LU3: The DEIS should describe the current condition of the land selected for the proposed project, discuss whether the land is classified as disturbed, and describe to what extent the land could be used for other purposes	EPA, 08/04/09
	LU4: We'd like to see projects done on disturbed land. And it seems like everyone always goes back to BLM because this is basically free land to corporations. And so that always seems to be where these projects line up. But it's interesting that BLM has recognized that disturbed lands are something they should be looking at because they've launched a project in Arizona to start doing it. And my question is if we can do it in Arizona where there is not as many projects being on the chopping blocks as there is in California why didn't you start here. But it should have started here looking at disturbed lands rather than starting with fairly pristine, ungraded land over off of [Santa Fe] Fire Road.	Claudia Sall, affiliated with the California Desert Coalition, Lucerne Valley, 7/29/09
	LU5: I would like to say that the environmental community supports projects being sited on disturbed lands over pristine habitat and pristine public lands.	April Sall, representing the Wildlands Conservancy and the California Desert Coalition, Lucerne Valley, 7/29/09
Impacts of development of undisturbed public lands	LU6: The plan amendment must fully analyze the impacts of industrial development on public lands of an undisturbed nature.	The Wilderness Society, 8/21/09
Private Property Values	LU7: Project's effect on surrounding private land values.	Chuck Bell, representing LVEDA, Lucerne Valley, 08/03/09

Table 1 Summary of all Comments Received (by topic)

Resource/Issue	Comment	Commenter
LAND USE (Continued)		
Areas to Prioritize for Siting	LU8: ■ Lands that have been mechanically disturbed, i.e., locations that are degraded and disturbed by mechanical disturbance: – Lands that have been "type-converted" from native vegetation through plowing, bulldozing or other mechanical impact often in support of agriculture or other land cover change activities (mining, clearance for development, heavy off-road vehicle use). ■ Public lands of comparatively low resource value located adjacent to degraded and impacted private lands on the fringes of the CDCA: – Allow for the expansion of renewable energy development onto private lands. – Private lands development offers tax benefits to local government. ■ Brownfields: – Revitalize idle or underutilized industrialized sites. – Existing transmission capacity and infrastructure are typically in place. ■ Locations adjacent to urbanized areas: – Provide jobs for local residents often in underserved communities; – Minimize growth-inducing impacts; – Provide homes and services for the workforce that will be required at new energy facilities; – Minimize workforce commute and associated greenhouse gas emissions. ■ Locations that minimize the need to build new roads. ■ Locations that could be served by existing substations. ■ Areas proximate to sources of municipal wastewater for use in cleaning. ■ Locations proximate to loads centers. ■ Locations adjacent to federally designated corridors with existing major transmission lines	Audubon California, California Wilderness Coalition, Defenders of Wildlife, Desert Protective Council, Mojave Desert Land Trust, Natural Resources Defense Council, Sierra club, The Nature Conservancy, The Wilderness Society, The Wildlands Conservancy, Unknown Date

Table 1 Summary of all Comments Received (by topic)

Resource/Issue	Comment	Commenter
LAND USE (Continued)		
High Conflict Areas	LU9: ▪ Locations that support sensitive biological resources, including: federally designated and proposed critical habitat; significant populations of federal or state threatened and endangered species, significant populations of sensitive, rare and special status species, and rare or unique plant communities. ▪ Areas of Critical Environmental Concern, Wildlife Habitat Management Areas, proposed HCP and NCCP Conservation Reserves. ▪ Lands purchased for conservation including those conveyed to the BLM. ▪ Landscape-level biological linkage areas required for the continued functioning of biological and ecological processes. ▪ Proposed Wilderness Areas, proposed National Monuments, and Citizens' Wilderness Inventory Areas. ▪ Wetlands and riparian areas, including the upland habitat and groundwater resources required to protect the integrity of seeps, springs, streams or wetlands. ▪ National Historic Register eligible sites and other known cultural resources. ▪ Locations directly adjacent to National or State Park units.	Audubon California, California Wilderness Coalition, Defenders of Wildlife, Desert Protective Council, Mojave Desert Land Trust, Natural Resources Defense Council, Sierra club, The Nature Conservancy, The Wilderness Society, The Wildlands Conservancy, Unknown Date
NEPA PROCESS		
Programmatic Solar EIS	NP1: The DEIS should identify whether the proposed project is located within one of the solar energy study areas, as defined by the BLM and Department of Energy.	EPA, 08/04/09
Significance Criteria	NP2: The DEIS should clearly describe the rationale used to determine whether impacts of an alternative are significant or not. Thresholds of significance should be determined by considering the context and intensity of an action and its effects (40 CFR 1508.27)	EPA, 08/04/09
PROJECT ALTERNATIVES		
Alternative Sites	ALT1: Have you guys looked at any other possible placements for this solar generating plant instead of around here? Because you guys have also got an idea for wind turbines, you know, coming in out here.	Jeff Arnold, Lucerne Valley, 7/29/09
	ALT2: You guys ought to look at other areas and less populated areas and if, you know, you want to live in Tehachapi with the wind mills or over in Desert Hot Springs with the wind mills over there and look out your window and just see whoosh, whoosh. Well I don't want to see it.	Jim Meshard, Lucerne Valley, 7/29/09

Table 1 Summary of all Comments Received (by topic)

Resource/Issue	Comment	Commenter
PROJECT ALTERNATIVES (Continued)		
Alternative Sites	ALT3: You got perfect stuff over here at Highway 58 and 395. You've got a huge solar project there, all the infrastructure is there, the dirt is there, the BLM owns probably all of it. You've got Edwards Air Force Base there, millions of acres. The BLM has got millions of acres east of Yucca Valley that they can do this stuff. And I just think that Edison is just trying to take advantage of the close proximity to save running power lines so far. They're planning on running another line all the way from Morongo Valley all the way across our mountains again. And they're probably want to hook this into that. We're just really being hit here.	Jim Meshard, Lucerne Valley, 7/29/09
	ALT4: I believe that it is unnecessary for this project to be located on undeveloped BLM land. The Lucerne Valley area has thousands of acres of abandoned farmland that are already disturbed and degraded. Chevron should use some of this private land to build its project. Much of this abandoned farmland is already serviced by utility lines.	Brendan Hughes, Joshua Tree, 7/25/09
	ALT5: [The following is a response to the question on the comment form, "What issues should be addressed in this environmental document?"] Alternative. Solar power / wind power installed on our homes	Charlene Claybaugh, affiliated with the Johnson Valley Improvement Association, Lucerne Valley, 7/29/09
Alternative Technologies/ Comparative Analysis	ALT6: The DEIS should describe how each alternative was developed, how it addresses each project objective, and how it will be implemented. The alternatives analysis should include a discussion of alternative sites, capacities, and generating technologies, including different types of solar technologies and describing the benefits associated with the proposed technology.	EPA, 08/04/09
	ALT7: The DEIS should expand the alternatives analysis to include consideration of residential and wholesale disturbed generation as an alternative. For example, consider an alternative that includes the installation of photovoltaic (PV) panels in residential and commercial areas near urban load sources.	EPA, 08/04/09
Range of Alternatives	ALT8: The BLM must thoroughly consider and present the public with a true range of alternative sites. "Reasonable alternatives should include, but are not necessarily limited to, alternative sites, capacities, and technologies as well as alternatives that identify environmentally sensitive areas or areas with potential use conflicts." We encourage the BLM to analyze an alternative project site on previously disturbed lands.	The Wilderness Society, 8/21/09

Table 1 Summary of all Comments Received (by topic)

Resource/Issue	Comment	Commenter
PROJECT ALTERNATIVES (Continued)		
Rooftop Solar	ALT9: Energy generated by rooftop solar systems will be more reliable, less vulnerable, more quickly installed, and cheaper.	Cynthia Anderson, Yucca Valley, 8/8/09
	ALT10: Chevron should consider installing these 45 MW of solar panels onto the rooftops of homes and businesses in the greater Victorville area. Both of these options would fit the ultimate purpose and need of the project. The need is for renewable power for the uses of people. The purpose of the project is to provide that power. Therefore both of these options should be presented and considered as reasonable alternatives to the proposed action. Indeed, BLM should determine one of these to be the preferred alternative to the action.	Brendan Hughes, Joshua Tree, 7/25/09
	ALT11: And also last thing is that in regards to changing technology we feel that distributed energy and local rooftop PV is really the way of the future. And certainly all of our desert preserves have onsite renewable energy and most are off the grid. So we support Chevron's use of rooftop and parking lot PV structures that we saw in the photographs.	April Sall, representing the Wildlands Conservancy and the California Desert Coalition, Lucerne Valley, 7/29/09
	ALT12: As alternatives to large-scale renewable facilities on public land, this project's analysis should include a quantitative assessment of the megawatts of solar power that could potentially be generated within the urban areas of demand (ie: roof top and parking lot systems) prior to any further commitment of public land resources to subsidize urban areas.	Chuck Bell representing LVEDA, Lucerne Valley, 8/3/09
	ALT13: Chevron Energy Solutions already know how to install solar panels on roof tops. I ask that they continue to do so and leave the desert alone.	Betty Munson, Johnson Valley, 08/22/09
	ALT14: Why couldn't this be warehouses and something else underneath it? Why does it have to be just taking a piece of desert and destroying it just for solar? Why couldn't it have more than just one purpose?	Dan Musetti, affiliated with Hemet Ranch, San Bernardino, 7/30/09
Technology Alternative	ALT15: You want to install Your Solar Panels in. Why not install the "Wind Mill" type power converters?	Steven Beavers, Barstow, 7/17/09
Water Quality Impacts of Project Alternatives	ALT16: DEIS should include an analysis of the potential for alternatives to cause adverse aquatic impacts such as impacts to water quality and aquatic habitats.	EPA, 08/04/09
PROJECT DESCRIPTION		
CDCA Plan Amendment	PD1. We're really concerned about what the CDCA Amendment is. Because obviously as it was mentioned before Green Path North is being planned to come through here and this project is right in that CDCA Amendment possible for that alternate corridor. And we need some understanding of what your CDCA Amendment is going to be. And it's not clear on anything that you have put out what it is going to be. Word in here just in here on the floor before the meeting says it's just to acknowledge that this is a renewable energy project but nothing in your information so far has said that. So, we need some clarification on that.	Claudia Sall, affiliated with the California Desert Coalition, Lucerne Valley, 7/29/09
	PD2: What is the nature of the cdca amendment?	Claudia Sall, affiliated with the California Desert Coalition, Lucerne Valley, 8/3/09

Table 1 Summary of all Comments Received (by topic)

Resource/Issue	Comment	Commenter
PROJECT DESCRIPTION (Continued)		
Dust Control	PD3: Now are you going to have paved roadways for access between there or are you going to leave it dirt?	Roger Peterson, affiliated with myjeeprocks.com, Lucerne Valley, 7/29/09
Restoration	PD4: Also I would think the BLM on all these projects should be required, because they all have a life, when the life is over the project will go away and you should require a payment bond of 100 percent figured at what it'll probably cost in 20 years or whatever the life of the project is to restore it back to the original desert okay, to renew it.	Roger Peterson, affiliated with myjeeprocks.com, Lucerne Valley, 7/29/09
	PD5: It's very important to think about the cumulative effects of the desert and how we're going to reuse the land that these projects are being sited on when that technology is obsolete so that we are maximizing the use of the lands and not disturbing anymore pristine habitat.	April Sall, representing the Wildlands Conservancy and the California Desert Coalition, Lucerne Valley, 7/29/09
	PD6: Twenty years from now this thing will probably be obsolete you know. And then what are you going to do?	Gary Hatfield, member of the Society for Conservation of Bighorn Sheep, Lucerne Valley, 7/29/09
	PD7: Bonding requirements for site reclamation/restoration.	Chuck Bell representing LVEDA, Lucerne Valley, 8/03/09
	PD8: The BLM should do a thorough analysis of the anticipated costs of decommissioning and restoring the project site. The BLM should also require bonds be purchased prior to development.	The Wilderness Society, 8/21/09
Technology	PD9: Technology is rapidly changing as we all know. And some of these projects will be obsolete by the time they are in line. And photovoltaics is possibly not in that category but it's very important to think about the cumulative effects of the desert and how we're going to reuse the land that these projects are being sited on when that technology is obsolete so that we are maximizing the use of the lands and not disturbing anymore pristine habitat.	April Sall, representing the Wildlands Conservancy and the California Desert Coalition, Lucerne Valley, 7/29/09
Transmission	PD10: I had a question as to you're going to use the Foothill Road transmission lines for electricity? Are you going to add anymore power poles to it?	Larry Meyer, Lucerne Valley, 7/29/09
	PD11: We are concerned that any new transmission corridors would come about and I understand that the first 20 megawatts is okay and then if the second phase there might need to be additional transmission.	D'Anne Albers, representing Defenders of Wildlife and the Sierra Club Desert Committee Energy Committee, Lucerne Valley, 7/29/09
	PD12: In order to support a project like this there would have to be some pretty good assurances, number one is that you're only planning on tying into the SCE line, you're not going to bait and switch and then want to tie into the proposed LADWP line that is a huge battle that we're trying to stop.	Roger Peterson, affiliated with myjeeprocks.com, Lucerne Valley, 7/29/09
	PD13: It would appear that the solar project intends to use the existing SCE distribution power line. If the proposal requires an upgrade to this power line, the impacts associated with the upgrade should be addressed.	Carol Miller, Town of Apple Valley, 8/11/09

Table 1 Summary of all Comments Received (by topic)

Resource/Issue	Comment	Commenter
PURPOSE AND NEED		
General	PN1: The Purpose and need should be a clear, objective statement of the rationale for the proposed project. The DEIS should discuss the proposed project in the context of the larger energy market that this project would serve: identify potential purchasers of the power produced; and discuss how the project will assist the state in meeting its renewable energy portfolio standards and goals.	EPA, 08/04/09
RECREATION		
Cumulative Impacts	REC1: We are concerned about the cumulative impact of all the different projects that are hitting the desert, the wind generating plants, the solar plants, all of them and the effect they will have on recreation and on the quality of life in the desert.	Harry Baker, representing the Partnership of Johnson Valley and affiliated with CA4WDC, Lucerne Valley, 7/29/09
REGULATORY PROCESS/PUBLIC INVOLVEMENT		
	RP1: I appreciate the conflict that BLM has with the mandate from the Department of Energy to push through projects, renewable energy and their conflict with their mission statement to preserve land for the public.	Ray Pessa, member of Partnership for Johnson Valley and Friends of Giant Rock, Lucerne Valley, 7/29/09
	RP2: And there's actually several groups including Sierra Club and Defenders of Wildlife and Center of Biodiversity and the Wildlands Conservancy who have worked together and the Nature Conservancy on siting criteria for renewable energy projects. And that is publicly available to agencies and to several of the industry groups who we have already been talking with.	Claudia Sall, affiliated with the California Desert Coalition, Lucerne Valley, 7/29/09
SOCIAL AND ECONOMIC CONSIDERATIONS		
Economic Benefits	SEC1: When this project is completed, how many like tax dollars would actually go to Lucerne Valley?	Chad Burlin, Lucerne Valley, 7/29/09
	SEC2: How much would Chevron donate to Lucerne Valley in terms of community projects and so forth?	Chad Burlin, Lucerne Valley, 7/29/09
	SEC3: Will there be any economic benefit for the residents of Lucerne Valley? Will there be employment opportunities?	Dennis Pond, Lucerne Valley, 08/03/09
	SEC4: The cost/benefit of power produced vs. from all other sources.	Chuck Bell representing LVEDA, Lucerne Valley, 08/03/09
	SEC5: Utilities, PUC and the renewable industry need to devise means to reward communities that will bear the burden of all these solar/wind plants – and in turn provide incentives for acceptance (i.e. reduced elec. rates, etc). Minimal local employment, minor amounts of property taxes and the occasional donation to some community organization do not provide adequate compensation. Even a program ensuring the County receives any sales tax revenue does not substantially benefit the affected community.	Chuck Bell representing LVEDA, Lucerne Valley, 08/03/09

Table 1 Summary of all Comments Received (by topic)

Resource/Issue	Comment	Commenter
SOCIAL AND ECONOMIC CONSIDERATIONS (Continued)		
Private Sector Opportunities	SEC6: Use of BLM land should not displace private sector opportunities – with the cheaper use of gov. [government] land competing w/solar plant options on private land (ie: tremendous amounts of fallowed agricultural and disturbed parcels in s. Cal. counties that cannot otherwise be developed due to water and other restrictions) - allowing landowners to make the best use of their properties – in turn providing local jurisdictions with more property tax revenue.	Chuck Bell representing LVEDA, Lucerne Valley, 08/03/09
Property Values	SEC7: Project's effect on surrounding private land values.	Chuck Bell, representing LVEDA, Lucerne Valley, 08/03/09
Project-related employment	SEC8: I saw you're going to hire something like 40 workers at like peak production and two permanent workers. I was wondering how many of those workers let's say would be local residents of Lucerne Valley?	Chad Burlin, Lucerne Valley, 7/29/09
General – Property Values	SEC9: [The following is a response to the question on the comment form, "What issues should be addressed in this environmental document?"] The impact of … real estate values.	Charlene Claybaugh, affiliated with the Johnson Valley Improvement Association, Lucerne Valley, 7/29/09
	SEC10: [The following is a response to the question on the comment form, "What issues should be addressed in this environmental document?"] devaluation of property values	Dawn Tonioli, Lucerne Valley, 7/29/09
	SEC11: [The following is a response to the question on the comment form, "What issues should be addressed in this environmental document?"] property values will go down	M Diane Hunnicult, Lucerne Valley, 7/29/09
	SEC12: [The following is a response to the question on the comment form, "What issues should be addressed in this environmental document?"] devalue property	Juanita Crouse, Lucerne Valley, 7/29/09
SOILS		
Soil Resources	S1: Chevron Energy Solutions and BLM should dedicate adequate time and resources early in the process to addressing soil resources issues adequately, including through the preparation of a detailed drainage, erosion and sediment control plan that addresses these potential impacts and provides mitigation measures that will render these hazards to a level less than significant.	The Wilderness Society, 8/21/09
TRAFFIC AND TRANSPORTATION		
Impacts to Santa Fe Fire Road	TR1: Will the Santa Fe Trail Road remain open for public access?	Gary Hatfield, member of the Society for Conservation of Bighorn Sheep, Lucerne Valley, 7/29/09
	TR2: You said Santa Fe Fire Road was going to stay open. Will it?	Roger Peterson, affiliated with myjeeprocks.com, Lucerne Valley, 7/29/09
Hwy 247 – recommended improvements	TR3: A right-turn lane on Hwy 247 would provide safer egress in this area of high-speed traffic – especially for the construction phase.	Chuck Bell, representing LVEDA, Lucerne Valley, 08/03/09

Table 1 Summary of all Comments Received (by topic)

Resource/Issue	Comment	Commenter
TRAFFIC AND TRANSPORTATION (Continued)		
General – Traffic	TR4: [The following is a response to the question on the comment form, "What issues should be addressed in this environmental document?] The impact of … traffic…	Charlene Johnson, affiliated with the Johnson Valley Improvement Association, Lucerne Valley, 7/29/09
Traffic impacts	TR4: The Town of Apple Valley requests that BLM identify within the EIS any impacts related to traffic to Highway 18 and Bear Valley Road within the Town's Sphere of Influence and within the Town limits.	Carol Miller, Town of Apple Valley, 8/11/09
Mitigation	TR5: Any impacts that are identified through a traffic study should be mitigated.	Carol Miller, Town of Apple Valley, 8/11/09
UTILITIES		
Impact on Public Utilities	UT1: And then a more direct basis I want to know, you said, 10,000 gallons of water per year don't sound like very much to me. Are you going to be using local water systems from the community or are you going to drill your own wells or how are you going to come up with that water and is that actually realistic?	Ray Pessa, member of Partnership for Johnson Valley and Friends of Giant Rock, Lucerne Valley, 7/29/09
Transmission Line (current load, capacity, planned upgrades)	UT2: The existing transmission line's available capacity – ultimate requirement for upgrading. Net transmission loss through said line.	Chuck Bell, representing the LEDVA, Lucerne Valley, 08/03/09
	UT3: What is the present load on the 33kv line?	Claudia Sall, affiliated with the California Desert Coalition, Lucerne Valley, 8/3/09
	UT4: Since the combined phases will need 45,000 kV of transmission capacity, how will that upgrade be addressed? I heard a lot of probables, but as these projects are not planned in a vacuum, there must be a plan of how this will be accomplished, i.e. if there is a request into SCE for upgrading this line, does that mean just restringing?	Claudia Sall, affiliated with the California Desert Coalition, Lucerne Valley, 8/3/09
	UT5: Does the ROW application include transmission upgrade?	Claudia Sall, affiliated with the California Desert Coalition, Lucerne Valley, 8/3/09
GENERAL COMMENTS		
General Support	GEN1: We have been way too long depending on foreign oil for our energy. It's time to utilize all alternative energy, solar, wind, bio diesel, and anything else that comes along. I support the project 100%.i	Larry Mayer, Lucerne Valley, 7/29/09
	GEN2: I do support renewable energy, you know, as it is not environmentally detrimental.	Chad Burlin, Lucerne Valley, 7/29/09
	GEN3: I applaud Chevron Energy Solutions in proposing a renewable energy project.	April Sall, representing the Wildlands Conservancy and the California Desert Coalition, Lucerne Valley, 7/29/09

Table 1 Summary of all Comments Received (by topic)

Resource/Issue	Comment	Commenter
GENERAL COMMENTS (Continued)		
General Support	GEN4: I'm all for solar anywhere it can be installed. We have plenty of sun so the desert is the perfect place. It will help us get off our reliance on foreign oil.	Gloria Williams, Lucerne Valley, 08/15/09
	GEN5: I just wanted you to know I live in Johnson Valley and have had family owned property for 56 years and I support the Chevron Lucerne Valley project. Please continue to allow growth and investment in public lands. This is an excellent resource for generations to come.	Rich Rhor, Lucerne Valley, 08/13/09
	GEN6: Just to let you know that we do support renewable energy as long as it is not environmentally detrimental.	D'Anne Albers, representing Defenders of Wildlife and the Sierra Club Desert Committee Energy Committee, Lucerne Valley, 7/29/09
	GEN7: The proposed Lucerne Valley Solar Project is probably the best possible system to produce electricity with the least intrusion into the lives of local residents	Dennis Pond, Lucerne Valley, 08/03/09
General Opposition	GEN8: I'm very much in favor of renewable energy. What I'm not in favor of is this kind of corporation, Chevron.	Tony Malone, affiliated with Victor Valley College, MAC, and MDAQMO Lucerne Valley, 7/29/09
	GEN9: First of all I think that this project, you know, should not happen. Okay, I'm against it.	Jim Meshard, Lucerne Valley, 7/29/09
	GEN10: Solar fields are not the answer to America's energy needs.	Cynthia Anderson, Yucca Valley, 8/8/09
	GEN11: [The following is a response to the question on the comment form, "What issues should be addressed in this environmental document?"] last desert for desert toys will have lots of roads we have used for 50 years why take it away from us.	M Diane Hunnicult, Lucerne Valley, 7/29/09
	GEN12: [The following is a response to the question on the comment form, "What issues should be addressed in this environmental document?"] No end to putting up "many"	Juanita Crouse, Lucerne Valley, 7/29/09
General (misc.)	GEN13: Speaker stated the previous speaker [Harry Baker] expressed his concern. Baker commented on cumulative, recreation, air quality, and transportation issues.	Glen Davidson, Lucerne Valley, 7/29/09
	GEN14: I sincerely hope and pray that any licenses granted for solar electric projects contain iron-clad rules for site maintenance during the useful life of the project and site remediation and clean-up when the project reaches the end of its useful life. I would hate to think that we have made mistakes that we have done and are still doing with mining facilities. Leaving a desert site filled with abandoned junk should be unthinkable. Let's not let the rush for renewable energy be the cause of destruction of our natural beauty	Edward Wood, Golden Dale, WA, 08/15/09
	GEN15: Include the total project's phases in the analysis – not just Phase 1.	Chuck Bell, representing LVEDA, Lucerne Valley, 08/03/09

Table 1 Summary of all Comments Received (by topic)

Resource/Issue	Comment	Commenter
GENERAL COMMENTS (Continued)		
General (misc.)	GEN16: [The following is a response to the question on the comment form, "What issues should be addressed in this environmental document?"] Notice all cactus's from wind farm in Palm Springs area have been removed.	M Diane Hunnicult, Lucerne Valley, 7/29/09
General – Construction and Maintenance	GEN17: [The following is a response to the question on the comment form, "What issues should be addressed in this environmental document?"] The impact of … construction, maintenance…	Charlene Claybaugh, affiliated with the Johnson Valley Improvement Association, Lucerne Valley, 7/29/09
REQUESTS FOR INFORMATION		
Project Map	Please send me a map of the project area. Please put me on the public notification list	Meg Grossglass, Off Road Business Association, 7/15/09
	Can you provide maps that delineate the boundaries of the project and list legal descriptions of the parcels?	Jim Porter, California State Lands Commission, 7/16/09
	Is there a map available on the location of this PV project?	Dennis Morrison, United States Army, 7/16/09
	Can you please send me a map of the project area?	Joseph V. Ross, United States Marine Corps 7/17/09
	Can you please send me a map of the project area?	Gary Hatfield, member of the Society for Conservation of Bighorn Sheep, 7/22/09
PROJECT NOTIFICATION LIST		
Requests to be added to Project Lists	Please put me on the public notification list.	Meg Grossglass, Off Road Business Association, 7/15/09
	Please include me on your email distribution list for CES Lucerne Valley Solar.	Jim Pugliese, 7/23/09
	Please add me to your mailing list	Sandra Fairchild, EPG, Inc., Henderson NV, 8/3/09
MISCELLANEOUS		
Offer of Services	I would like to offer my company's service for bidding on Lucerne Valley Solar Project	Matt McPherson, Heliopower, 7/2109
	We are a fending company interested in providing fencing for this project. Can you please provide me information on appropriate contacts?	Dale Marriott, FenceCorp, 7/22/09
Investment (Scam)	I need assistance in investing in your country.	Tim McCarron, Fidelity Investments, International, UK, 7/27/09

Table 1 Summary of all Comments Received (by topic)

Resource/Issue	Comment	Commenter
MISCELLANEOUS (Continued)		
Project Fund (Scam)	I wish to notify you that your long overdue project fund has been gazetted to be finally released to you through the foreign remittance department of this bank.	Adzei Bekoe, Eco Bank Intl. PLC, 8/18/09
Bidder's List	I work for a substation packer (Power Substations, Inc.) and am interested in being added to the bidders list for the Lucerne Valley Solar Project.	Jordan T. Demmien, Power Substations, Inc., July 20, 2009

4.0 DRAFT PLANNING CRITERIA

Planning criteria for consideration of the proposed CDCA Plan Amendment to provide for power generation at this site and reroute include:

a. The plan amendment will be completed in compliance with FLPMA, NEPA and all other applicable Federal and State laws, Executive orders, and management policies of the BLM;

b. The plan amendment will recognize and conform to previous site-specific planning decisions from BLM regional and bioregional plans;

c. Where existing planning decisions are still valid, those decisions will remain unchanged;

d. For the purposes of cumulative analysis, past, present, and reasonably foreseeable projects will be those alternative energy projects which have been approved, or for which a draft or final plan of development has been received, or is anticipated prior to the release of the draft or final EIS, within the CDCA;

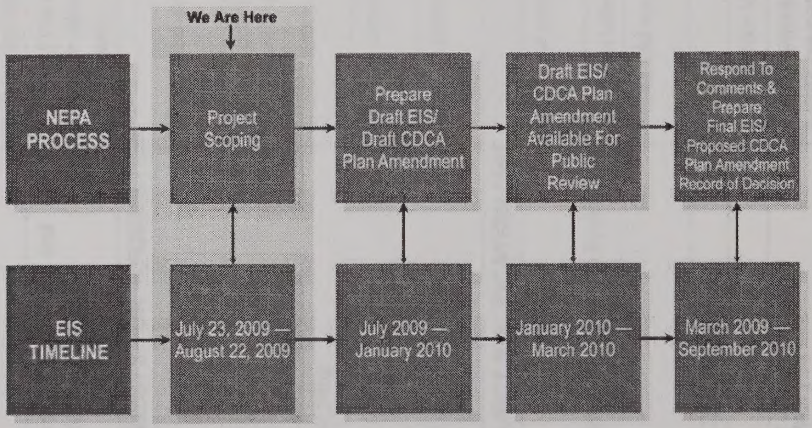
e. The plan amendment and any ROWs issued will recognize valid existing rights; and

f. Interagency and Native American Tribal consultations will be conducted in accordance with policy, and will be given due consideration. The planning process will include the consideration of impacts on Indian trust assets, other jurisdictions, and agencies.

5.0 SUMMARY OF FUTURE STEPS IN THE PLANNING PROCESS

The EIS process requires a team of interdisciplinary resource specialists to complete each step. An important part of the BLM planning process is engaging the public and relevant agencies from the earliest stages of and throughout the planning process to address issues, comments, and concerns. The steps of the planning process and agency authority and decisions to be made are described below. Figure 2 provides a summary of the EIS process and schedule.

Figure 2 Planning Process Flow Chart


We Are Here
NEPA PROCESS
Project Scoping
Prepare Draft EIS/ Draft CDCA Plan Amendment
Draft EIS/ CDCA Plan Amendment Available For Public Review
Respond To Comments & Prepare Final EIS/ Proposed CDCA Plan Amendment Record of Decision
EIS TIMELINE
July 23, 2009 — August 22, 2009
July 2009 — January 2010
January 2010 — March 2010
March 2009 — September 2010

The project site is presently managed under the CDCA Plan (BLM 1980) (as amended) and the WEMO (BLM 2006), an amendment to the CDCA Plan. Information and decisions from the CDCA Plan and the WEMO will be reviewed and incorporated in this plan amendment to the extent possible.

Identification of Issues

Issues associated with the project were identified through the scoping period, which initiated the planning process. The scoping process and the issues identified through the scoping process are documented in this scoping report and from the BLM Barstow Field Office.

Data Information and Collection

Much of the necessary resource data and information will be compiled and used from existing data on file at BLM Barstow Field Office, or through other local agencies and academic institutions. Additional data and information will be obtained from current studies being conducted by BLM and other sources to update and/or supplement BLM's.

Prepared Draft EIS/Draft Plan Amendment

Based on collected data, including public comments, a description of the project and alternatives (including no action) will be developed. Only alternatives that meet a standard of technical and economic feasibility will be considered in detail. The alternatives will be responsive to issues identified through the scoping process, fulfill the purpose and need (as described in the EIS), be consistent with agency planning documents, and address key social and environmental concerns. Impacts that could result from implementing the project and alternatives will be analyzed and measures to mitigate those impacts will be identified where appropriate.

Draft EIS/Draft CDCA Plan Amendment and Public Comment Period

Although BLM welcomes input at any time during the planning process, the next official public comment period will be open upon publication of the Draft EIS/Draft CDCA Plan Amendment, which is anticipated to be in January 2010. This document will evaluate a range of project alternatives including a "No Action" alternative and a "Preferred" alternative and will generally include the following:

- Summary
- Purpose and need for the project
- Description of alternatives (including the project)
- Affected environment
- Environmental consequences
- Mitigation measures to minimize impacts
- Other NEPA requirements

Upon completion of the Draft EIS /Draft CDCA Plan Amendment, a Notice of Availability will be published in the Federal Register and a 90-day public comment period will follow. Copies of the Draft EIS/Draft CDCA Plan Amendment will be distributed to elected officials, regulatory agencies, and interested members of the public. The document will also be available on-line at the Barstow Field Office website: http://www.blm.gov/ca/st/en/fo/barstow.html.

During this time, public hearings will be held to obtain public comments on the document. All activities where the public is invited to attend will be announced at least 15 days prior to the event in local news media. BLM will also receive written comments.

Respond to Comments, Prepare Final EIS/Proposed CDCA Plan Amendment and Record of Decision. After the public comment period, the BLM will respond to comments and prepare a Final EIS/Proposed CDCA Plan Amendment. The availability of the Final EIS/Proposed CDCA Plan Amendment will be announced in the Federal Register, and a 30-day public protest period will follow. Copies of the Final EIS/Proposed CDCA Plan Amendment will be distributed to elected officials, regulatory agencies, and interested members of the public. The document will also be available on-line at the Barstow Field Office website: http://www.blm.gov/ca/st/en/fo/barstow.html.

Following a 30-day Protest Period and concurrent 30-day Governor's Review, the BLM will resolve valid protests and prepare a Record of Decision, which is anticipated to be released in September 2010. A NOA for the ROD will be announced in the Federal Register

6.0 REFERENCES

United States Department of the Interior, Bureau of Land Management (BLM). 1980. *The California Desert Conservation Area Plan.* Bureau of Land Management Desert District, Riverside, CA.

__________. 2006. *The West Mojave Plan: A Habitat Conservation Plan and California Desert Conservation Area Plan Amendment*. Bureau of Land Management Desert District, Riverside, CA.

United States Department of the Interior. 2009 Secretary of the Interior's Secretarial Order No. 3285: *Renewable Energy Development by the Department of the Interior.* Signed March 11, 2009

species becomes listed in the future. Application requirements and issuance criteria for enhancement of survival permits through CCAAs are in the Code of Regulations (CFR) at 50 CFR 17.22(d) and 17.32(d), respectively. See also our joint policy on CCAAs, which we published in the **Federal Register** with the Department of Commerce's National Oceanic and Atmospheric Administration, National Marine Fisheries Service (64 FR 32726; June 17, 1999).

The proposed CCAA is programmatic in nature, and, under it, individual property owners who wish to participate would enroll their properties under the IDFG's section 10(a)(1)(A) permit through the issuance of a Certificate of Inclusion. The individual property owner would work with IDFG and us to develop a mutually agreeable site-specific management plan for the enrolled property. The site-specific plan will address known threats to sage-grouse through the implementation of identified conservation measures that are consistent with the participating landowner's land use activities and the CCAA. If a Certificate of Inclusion is signed and issued to a participating property owner, they would then be authorized to incidentally take sage-grouse if the species becomes listed under the ESA in the future, as long as the terms and conditions of the permit and the existing site-specific plan are followed.

The area to be covered under this proposed CCAA (Covered Area) is approximately 930,000 acres (ac) located in the West Central Planning Area (WCPA) in Washington, Adams, Gem, and Payette Counties, Idaho. Within the Covered Area, approximately 590,707 ac is non-Federally owned and would potentially be eligible for enrollment under the proposed CCAA. Sage grouse use habitats throughout the WCPA, including lekking (breeding display) areas, and nesting, brood rearing, and wintering habitats. Accurate estimates of the number of sage-grouse in the WCPA are not available.

The proposed CCAA identifies important sage-grouse use areas using a combination of known lek locations, and yearlong telemetry data identifying nesting, brood-rearing, and wintering habitats. The proposed CCAA also assumes that there are some areas where land uses or historic events have reduced habitat values so that they are no longer used by sage-grouse. However, the inherent physical factors and proximity to currently used habitat may make these areas candidates for restoration efforts.

The proposed CCAA is intended to result in benefits to sage-grouse by reducing or eliminating threats to the species on enrolled properties, and creating or maintaining habitat conditions that are suitable for all life-history stages of the species through the implementation of conservation measures. The proposed CCAA describes all of the threats to sage-grouse that have been identified in the WCPA, and a suite of potential conservation actions that could be implemented to address those threats. The conservation measures that would be implemented on any enrolled property would be identified in a site-specific conservation plan for that property. Activities that are covered under the CCAA and may be included in a site-specific plan as applicable include range and livestock management, farming operations, recreational activities, and general ranch operation and maintenance. These activities are described in more detail in the proposed CCAA.

Consistent with our CCAA Policy (64 FR 32726), the conservation goal of the proposed CCAA is to encourage enhancement and protection of suitable sage-grouse habitat on non-Federal lands by either maintaining or modifying existing land uses so that they are consistent with the conservation needs of sage-grouse. We can meet this conservation goal with the use of a CCAA by giving non-Federal landowners incentives to implement conservation measures, primarily through regulatory certainty concerning land-use restrictions that might otherwise apply should sage-grouse become listed under the ESA.

We provide this notice under section 10(c) of the ESA (16 U.S.C. 1531 *et seq.*) and the implementing regulations for NEPA (40 CFR 1506.6). We will evaluate the permit application, associated documents, and comments we receive to determine whether the permit application meets the requirements of section 10(a) of the ESA and NEPA and its implementing regulations. If we determine that all requirements are met, we will sign the proposed CCAA and issue a permit under section 10(a)(1)(A) of the ESA to the IDFG for take of sage-grouse. We will not make our final decision until after the end of the 30-day public comment period, and we will fully consider all comments we receive during the public comment period.

Dated: July 15, 2009.

David J. Wesley,

Deputy Regional Director, Region 1, U.S. Fish and Wildlife Service, Portland, Oregon.

[FR Doc. E9–17523 Filed 7–22–09; 8:45 am]

BILLING CODE 4310–55–P

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

[CACA 49561, LLCAD08000L5101 ER0000LVRWB09B3220]

Notice of Intent To Prepare an Environmental Impact Statement and Amendment to the California Desert Conservation Area Plan for the Lucerne Valley Solar Project; San Bernardino County, CA

AGENCY: Bureau of Land Management, Interior.

ACTION: Notice of intent.

SUMMARY: In compliance with the National Environmental Policy Act of 1969 (NEPA), as amended, and the Federal Land Policy and Management Act of 1976 (FLPMA), as amended, the Bureau of Land Management (BLM) Barstow Field Office, Barstow, California intends to prepare an Environmental Impact Statement (EIS) and by this notice is announcing the beginning of the scoping process to solicit public comments and identify issues. The EIS will analyze the impacts of the Lucerne Valley Solar Plant on public lands in San Bernardino County, California. The project is being proposed by Chevron Energy Solutions (the Applicant). The applicant has requested a right-of-way (ROW) authorization to construct and operate a 45 megawatt solar photovoltaic project and connect it to the existing Southern California Edison 33 kV distribution system. Within the 516-acre solar facility, the project would include a new switchyard, control/maintenance building, and parking area. The EIS will analyze the site-specific impacts to the environment from the proposed grant of the ROW.

DATES: This notice initiates a public participation and scoping period for the EIS of at least 30 days. This scoping period will also be announced through the local news media, newspapers, and BLM's Web page (*http://www.blm.gov/ca/st/en/fo/barstow.html*). During the public scoping period the BLM will solicit public comment on issues, concerns and opportunities that should be considered in the analysis of the proposed action. The BLM expects to hold two public meetings, one in Lucerne Valley and another in the city of San Bernardino. The meeting in Lucerne Valley will take place on July 29, 2009 at the Lucerne Valley Community Center located at 33187 Highway 247 East, Lucerne Valley, California from 6:30 p.m. to 8:30 p.m. The meeting in San Bernardino will take place on July 30, 2009 at the Family Life Public Enterprise Center, Conference Room 13, located at 1505 West Highland Ave., San Bernardino, California 92411 from 6:30 p.m. to 8:30 p.m. Information about the two meetings has been announced through the local news media, newspapers and BLM Web site (*http://www.blm.gov/ca/st/en/fo/barstow.html*). Comments on issues, potential impacts, or suggestions for additional alternatives may also be submitted in writing to the address listed below. In order to be included in the Draft EIS, all comments must be received prior to the close of the scoping period or 15 days after the last public meeting, whichever is later. We will provide additional opportunities for public participation upon publication of the Draft EIS.

ADDRESSES: You may submit comments related to the Lucerne Valley Solar Project by any of the following methods:

- *Web Site: http://www.blm.gov/ca/st/en/fo/barstow.html.*
- *E-mail: LucerneSolar@blm.gov.*
- *Fax:* (760) 252–6098.
- *Mail:* BLM Barstow Field Office, 2601 Barstow Road, Barstow, California 92311.

Documents pertinent to this proposal may be examined at the BLM Barstow Field Office.

FOR FURTHER INFORMATION CONTACT: For further information and/or to have your name added to our mailing list, send requests to: ATTN: Lucerne Valley Solar Project; contact Greg Thomsen, telephone (951) 697–5237; address BLM Barstow Field Office, 2601 Barstow Road, Barstow, California 92311; e-mail *LucerneSolar@blm.gov.*

SUPPLEMENTARY INFORMATION: Pursuant to Title V of FLPMA, sites associated with power generation or transmission not identified in the BLM's California Desert Conservation Area (CDCA) Plan (1980, as amended) will be considered through the plan amendment process.

Under Federal law, the BLM is responsible for processing requests for rights-of-way to authorize solar projects and other appurtenant facilities on the land it manages. BLM must comply with the requirements of NEPA to ensure that environmental impacts associated with construction, operation, and decommissioning will be identified, analyzed and considered in the application process. This will be accomplished through preparation of a Draft and Final EIS. The BLM will utilize the NEPA commenting process to satisfy the public involvement process for Section 106 of the National Historic Preservation Act (NHPA) (16 U.S.C. 470f) as provided for in 36 CFR 800.2 (d)(3).

This notice announces a period for public scoping of alternatives, issues, impacts and planning criteria associated with this project. In addition, the BLM is requesting the views of other agencies as to the scope and content of the environmental information that is germane to the statutory responsibilities or areas of expertise for those agencies in connection with the proposed project and the analysis of its impacts. Federal, State, and local agencies, as well as individuals or organizations that may be interested or affected by the BLM's decision on this project are invited to participate in the scoping process and, if eligible, may request or be requested by the BLM to participate as a cooperating agency.

The Applicant has applied for a ROW authorization to construct and operate a solar photovoltaic project on public lands. The public lands are managed by the BLM in accordance with the CDCA Plan and the West Mojave Plan, an amendment to the CDCA Plan. The 516-acre project would be built approximately 8 miles east of Lucerne Valley, San Bernardino County, California, at T. 4 N., R. 2 E., Section 19 (NE ¼ SW ¼, S ½ SW ¼, NW ¼ SE ¼, S ½ SE ¼), section 20 (W ½ W ½), section 29 (NW ¼ NW ¼), section 30 (N ½ NE ¼).

The EIS will describe and analyze the proposed project and will include:

(1) Measures to avoid, minimize, or mitigate impacts on the environment;

(2) The "No Action" alternative (no project would be built); and

(3) The "no solar" alternative (lands would be determined unsuitable for one or more types of solar generation).

Through public scoping, BLM will identify various issues, potential impacts, and mitigation measures.

The BLM has identified a potential list of issues that will need to be addressed in this analysis including, but not limited to, social and economic impacts, including impacts to the public from traffic; ground and surface water quantity and quality; plant and animal species including special status species; Tribal and cultural resources; and visual resources. If approved, the solar project on public lands would be authorized in accordance with the FLPMA and Federal regulations at Title 43 Code of Federal Regulations part 2800.

The CDCA Plan (1980, as amended) requires that all power generating facilities be considered through the planning process. Planning criteria for consideration of a CDCA plan amendment to provide for power generation at this site include:

a. The plan amendment will be completed in compliance with FLPMA, NEPA and all other applicable Federal and State laws, Executive orders, and management policies of the BLM;

b. The plan amendment will recognize and conform to previous site-specific planning decisions from BLM regional and bioregional plans;

c. Where existing planning decisions are still valid, those decisions will remain unchanged;

d. The plan amendment and any rights-of-way issued will recognize valid existing rights; and

e. Interagency and Native American Tribal consultations will be conducted in accordance with policy, and will be given due consideration. The planning process will include the consideration of impacts on Indian trust assets, other jurisdictions, and agencies.

You may submit written comments on issues and planning criteria at the public scoping meeting, or you may submit them via e-mail (*see* **ADDRESSES** section above). To be most helpful, you should submit comments within 15 days after the public scoping meeting. The BLM will identify issues and will place them into one of three categories:

1. Issues to be resolved in the plan;
2. Issues to be resolved through policy or administrative action; or
3. Issues beyond the scope of this plan.

The BLM will provide an explanation in the plan as to why we placed an issue in category two or three. The public is also encouraged to help identify any management questions and concerns that should be addressed in the plan. The BLM will work collaboratively with interested parties to identify the management decisions that are best suited to local, regional, and national needs and concerns.

Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Tom Pogacnik,

Deputy State Director for Natural Resources, California State Office.

[FR Doc. E9–17571 Filed 7–22–09; 8:45 am]

BILLING CODE 4310–40–P

DEPARTMENT OF THE INTERIOR

Bureau of Reclamation

Glen Canyon Dam Adaptive Management Work Group (AMWG)

AGENCY: Bureau of Reclamation, Interior.

ACTION: Notice of public meeting.

SUMMARY: The Glen Canyon Dam Adaptive Management Program (AMP) was implemented as a result of the Record of Decision on the Operation of Glen Canyon Dam Final Environmental Impact Statement to comply with consultation requirements of the Grand Canyon Protection Act (Pub. L. 102–575) of 1992. The AMP includes a federal advisory committee, the Adaptive Management Work Group (AMWG), a technical work group (TWG), a Grand Canyon Monitoring and Research Center, and independent review panels. The AMWG makes recommendations to the Secretary of the Interior concerning Glen Canyon Dam operations and other management actions to protect resources downstream of Glen Canyon Dam consistent with the Grand Canyon Protection Act. The TWG is a subcommittee of the AMWG and provides technical advice and recommendations to the AMWG.

DATES AND ADDRESSES: The AMWG will conduct the following meeting:

Date: Wednesday–Thursday, August 12–13, 2009. The meeting will begin at 9:30 a.m. and end at 5 p.m. the first day and will begin at 8 a.m. and conclude at approximately 3 p.m. on the second day. The meeting will be held at the Fiesta Inn, 2100 S. Priest Drive, Tempe, Arizona.

Agenda: The primary purpose of the meeting will be for the AMWG to discuss and recommend the Fiscal Year 2010–11 biennial budget, workplan, and hydrograph. In addition, they will receive updates and discuss the following items: (1) Mid-fiscal Year 2009 expenditures, (2) Status of Grand Canyon Monitoring and Research Center projects, (3) 2007 and 2008 Biological Opinion conservation measures, (4) Colorado River Basin hydrology, (5) Future Funding Sources for Non-native Fish Control Efforts, (6) the Draft Humpback Chub Comprehensive Plan, (7) a stakeholder's perspective by the Arizona Game and Fish Department, and other administrative and resource issues pertaining to the AMP. To view a copy of the agenda and documents related to the above meeting, please visit Reclamation's Web site at: *http://www.usbr.gov/uc/rm/amp/amwg/mtgs/09aug12/index.html.* Time will be allowed at the meeting for any individual or organization wishing to make formal oral comments. To allow for full consideration of information by the AMWG members, written notice must be provided to Dennis Kubly, Bureau of Reclamation, Upper Colorado Regional Office, 125 South State Street, Room 6107, Salt Lake City, Utah, 84138; telephone 801–524–3715; facsimile 801–524–3858; e-mail at *dkubly@usbr.gov* at least five (5) days prior to the call. Any written comments received will be provided to the AMWG members.

FOR FURTHER INFORMATION CONTACT: Dennis Kubly, Bureau of Reclamation, telephone (801) 524–3715; facsimile (801) 524–3858; e-mail at *dkubly@usbr.gov.*

Dated: July 7, 2009.

Tom Ryan,

Manager, Environmental Resources Division, Upper Colorado Regional Office, Salt Lake City, Utah.

[FR Doc. E9–17526 Filed 7–22–09; 8:45 am]

BILLING CODE 4310–MN–P

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

[LLCO07000.L16100000.DQ0000.CO–03]

Meeting Notice: Southwest Resource Advisory Council; Canyons of the Ancients National Monument Subgroup

AGENCY: Bureau of Land Management, Interior.

ACTION: Notice.

SUMMARY: In accordance with the Federal Land Policy and Management Act (FLPMA) and the Federal Advisory Committee Act of 1972 (FACA), the U.S. Department of the Interior, Bureau of Land Management (BLM) Southwest Resource Advisory Council (RAC) Canyons of the Ancients National Monument (Monument) Subgroup, will meet as directed below.

DATES: The Southwest RAC Canyons of the Ancients National Monument (Monument) Subgroup will meet on August 14, 2009 at the Anasazi Heritage Center in Dolores, Colorado. The meeting will begin at 9 a.m. One public comment period is planned and will begin at approximately 10 a.m. The meeting will adjourn at approximately 12 p.m.

FOR FURTHER INFORMATION CONTACT: Heather Musclow, Planner, 970–882–5632, LouAnn Jacobson, Manager, 970–882–5600, or e-mail *Heather_Musclow@blm.gov,* or visit the monument Web site at *http://www.co.blm.gov/canm/.*

SUPPLEMENTARY INFORMATION: The ten member subgroup has provided recommendations to the Southwest Resource Advisory Council concerning development and implementation of a management plan developed in accordance with FLMPA, for public lands within the Monument. We plan to discuss comments received during public review of the Draft Resource Management Plan/Draft Environmental Impact Statement. An overview of the Proposed Resource Management Plan/Final Environmental Impact Statement will be presented.

The meeting will be open to the public and will include a time set aside for public comment. Interested persons may make oral statements at the meeting or submit written statements at any meeting. Per-person time limits for oral statements may be set to allow all interested persons an opportunity to speak.

Summary minutes of Committee and Subgroup meetings are maintained at the Anasazi Heritage Center in Dolores, Colorado. They are available for public inspection and reproduction during regular business hours within thirty (30) days of the meeting. In addition, minutes and other information concerning the Committee and Subgroup can be obtained from the Monument planning Web site at: *http://www.blm.gov/rmp/canmwhich.*

Barbara Sharrow,

Designated Federal Official, Colorado Southwest Resource Advisory Council.

[FR Doc. E9–17358 Filed 7–22–09; 8:45 am]

BILLING CODE 4310–JB–P

DEPARTMENT OF THE INTERIOR

Office of the Special Trustee for American Indians

Notice of Additional Tribal Consultation Meetings

AGENCY: Office of the Special Trustee for American Indians, Interior.

ACTION: Notice of Tribal Consultation Meetings.

SUMMARY: Notice is hereby given of additional Tribal Consultation Sessions

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Appendix B
Scoping Meeting Notices

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U.S. Department of the Interior
Bureau of Land Management

News Release

For Immediate Release: July 14, 2009 CA-CDD-09-55

Contact: Stephen Razo 951-697-5217; email: srazo@ca.blm.gov
David Briery 951-697-5220; email: dbriery@ca.blm.gov

BLM Schedules Public Scoping Meetings for Solar Project in California Desert

The Bureau of Land Management (BLM) will hold public scoping meetings as part of an environmental review on the impacts of the proposed Lucerne Valley Solar Project in San Bernardino County, Calif. Chevron Energy Solutions has applied to the BLM for a right-of-way (ROW) on public lands to construct the solar photovoltaic power plant on approximately 516 acres about eight miles east of the community of Lucerne Valley.

BLM public scoping meetings will be held July 29 from 6:30 - 8:30 p.m. at the Lucerne Valley Community Center, 33187 Highway 247 East, Lucerne Valley CA 92356 and July 30 from 6:30 - 8:30 p.m. at the Family Life Public Enterprise Center, Conference Room 13, 1505 W. Highland Ave, San Bernardino CA 92411. The meetings will be part of a 30-day public scoping period that will begin later this week with publication in the Federal Register of the Notice of Intent (NOI) to conduct the environmental review.

During the scoping period, BLM solicits public comment on issues, concerns, potential impacts, alternatives, and mitigation measures that should be considered in the analysis of the proposed action. The agency then will use the public scoping comments in preparing the draft environmental documents, which are anticipated to be available for public review in late 2009.

BLM, as the lead agency under the National Environmental Policy Act, prepares the environmental impact statement (EIS) to analyze the site-specific impacts of the ROW application and a possible amendment to the California Desert Conservation Area Plan. The EIS will analyze the site-specific impacts on air quality, biological resources, cultural resources, water resources, geological resources and hazards, hazardous materials handling, land use, noise, and visual resources and transmission system engineering and transmission line safety.

If approved by the BLM, construction of the 45-megawatt (MW) thin-film photovoltaic project is proposed to begin December 1, 2010. The project would be constructed in two phases. Phase I would consist of up to 180,000 photovoltaic panels with a generating capacity of 20 MW. Phase II, with a generating capacity of 25 MW, would be similarly configured.

Related structures would include the construction of a new switchyard, control/maintenance building, and parking area. This facility would be accessed through an adjacent county road. A BLM open route on the project site may be realigned, but would remain designated as an open route. This solar project would be connected to an existing adjacent 33-kiloVolt (kV) distribution system.

Further details can be found at www.ca.blm.gov/barstow. Please e-mail any questions to LucerneSolar@mailto:blm.gov.

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U.S. Department of the Interior
Bureau of Land Management

News Release

For Immediate Release: July 24, 2009 CA-CDD-09-58

Contact: Stephen Razo 951-697-5217; email: srazo@ca.blm.gov
David Briery 951-697-5220; email: dbriery@ca.blm.gov

BLM Changes Public Meeting Location for Solar Project in California Desert

The Bureau of Land Management (BLM) has changed the location of the July 29 public scoping meeting for the proposed Lucerne Valley Solar Project from the Lucerne Valley Community Center, 33187 Highway 247 to the Lucerne Valley Elementary School, 10788 Barstow Road, Lucerne Valley, CA. The meeting will be from 6:30 – 8:30 p.m.

This meeting is part of a 30-day public scoping period that began with publication in the Federal Register of the Notice of Intent (NOI) to conduct an environmental review for the proposed Lucerne Valley Solar Project in San Bernardino County, Calif.

A second public scoping meeting scheduled for July 30 from 6:30 - 8:30 p.m. at the Family Life Public Enterprise Center, Conference Room 13, 1505 W. Highland Ave, San Bernardino CA remains as scheduled.

Chevron Energy Solutions has applied to the BLM for a right-of-way (ROW) on public lands to construct the solar photovoltaic power plant on approximately 516 acres about eight miles east of the community of Lucerne Valley.

During the scoping period, BLM solicits public comment on issues, concerns, potential impacts, alternatives, and mitigation measures that should be considered in the analysis of the proposed action. The agency then will use the public scoping comments in preparing the draft environmental documents, which are anticipated to be available for public review in late 2009.

Further details can be found at www.ca.blm.gov/barstow. Please e-mail any questions to LucerneSolar@blm.gov.

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MEETING

BUREAU OF LAND MANAGEMENT

COUNTY OF SAN BERNARDINO

PUBLIC SCOPING MEETING
LUCERNE VALLEY SOLAR PROJECT

LUCERNE VALLEY COMMUNITY CENTER

33187 HIGHWAY 247 EAST

LUCERNE VALLEY, CALIFORNIA

WEDNESDAY, JULY 29, 2009

7:00 P.M.

Reported by: Troy Ray

PETERS SHORTHAND REPORTING CORPORATION (916) 362-2345

APPEARANCES

David Briery, Bureau of Land Management

Lynette Elser, Bureau of Land Management

Larry LaPre, Bureau of Land Management

Mickey Quillman, Bureau of Land Management

Richard Rotte, Bureau of Land Management

Greg Thomsen, Bureau of Land Management

Juliet Don, Chevron Energy Solutions

Ralph Hollenbacher, Chevron Energy Solutions

Erec M. DeVost, Ecology and Environment, Inc.

Dave Plumpton, Ecology and Environment, Inc.

PUBLIC APPEARANCES

Chuck Bell

Paul Anthony Malone

Larry Mayer

Jeff Arnold

Harry Baker
Partnership for Yucca Valley

Glen Davidson

Ray Pessa
Partnership for Yucca Valley

Gary Hatfield

D'Anne Albers
Defenders of Wildlife and
Sierra Club Desert Committee Energy Committee

Chad Burlin

Jim Meshard

Roger Peterson

Claudia Sall

April Sall
Wildlands Conservancy and
California Desert Coalition

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PROCEEDINGS

MR. PLUMPTON: Well thank you all for coming out tonight, I think we'll get started. We'll go through a couple of introductions up here and talk about the agenda but first, thanks for coming out, we really appreciate it.

Tonight is the Lucerne Valley Solar Scoping Meeting. A little bit about some information that made it into some of the papers. There may have been a little bit of confusion about notices that were circulated. And someone who is far better to explain this than myself is Chuck Bell. If we could ask Chuck to come to the podium and just touch on this for a minute.

(Laughter.)

MR. BELL: You really want to be confused, right?

MR. PLUMPTON: No more than I am.

MR. BELL: Okay. Well apparently there was some confusion. This tonight is the Chevron Solar Plant on photovoltaic on BLM land east of Lucerne Valley.

The project that I think was probably -- and I haven't seen the newspaper -- that was heard at the Municipal Advisory Council last night and at the Economic Development Association meeting next Tuesday at five o'clock is Edison, it is Edison Mission. It is their proposed photovoltaic power plant, all on private land, fallowed ag land, about one mile due north of here, the corner of Rabbit

Springs Road and Highway 247 or Barstow Road. That's that project.

Now if you really want to get confused, talk about Canon and all those others we don't know anything about. That's whatever. But it is confusing. We're hearing bits and pieces. But that's as far as that goes. That's another separate project. That is a separate project and I think I saw one of their reps here tonight so you can talk to him.

MR. QUILLMAN: Great, thanks for clearing that up, Chuck, I appreciate that.

Ladies and gentlemen, my name is Mickey Quillman. I am the Chief of Resources and the Associate Field Manager out of the Barstow Field Office for the BLM and the Barstow Office covers this neck of the woods. We really appreciate you being here tonight.

Let me take just a second and introduce some of the folks from BLM that are currently here. David Briery back there by the door is our Public Affairs Officer. Larry LaPre is a wildlife biologist from the District. There he is right there. Lynette Elser is the District NEPA Coordinator, the National Environmental Policy Act. She makes sure we do everything the right way. Rich Rotte is a real estate person from our office there in Barstow so he's got all this figured out. Also the Project Manager for the BLM for the Chevron project is Greg Thomsen.

From Chevron Energy Solutions we have Ralph Hollenbacher. He is the Project Manager. And of course we have Juliet Don over here from Chevron as well.

And our consultants, E&E Consulting, Dave Plumpton at the table here and a couple of his folks.

And with that let's get started.

MR. PLUMPTON: Okay. As you can see on the screen, the agenda has us holding the open house until seven. We'd like to do a 20 minute presentation that covers a little bit about the project, our purpose in being here. Our purpose in asking for you to be here as well. And then we will conclude with a public comment session. Now there will be more about that later.

But briefly, if you would like to speak we'd ask that you fill out a speaker card. I've got all of the ones that have been completed to this point. Anybody who wants to can fill out another one, or if you haven't yet filled one out. But please do fill one out if you would like to speak.

The reason for this is your comments greatly inform this whole process but the administrative record for this project requires that we keep rather complete information. So understand that the information that goes onto the speaker cards becomes part of what is called the administrative record, which becomes public.

We also do this because we want to be able to attribute your comments back to you. We don't want anybody to be able to say, you missed my remark about Resource X and how this project might affect it. So please sign in at the entryway table; fill out a speaker card if you would like to provide a verbal comment.

If you would like to provide comment but don't wish to speak you can do so several different ways. You can take a comment form, fill it out and either mail it in or fax it back in.

And just the same as if you provide a verbal comment, your comments, concerns and remarks will make it into the administrative record and will help inform us during the analysis and the BLM in the completion of this environmental document.

And just lastly, we are here to get your comments on this project so thanks, once again, for coming out tonight.

MR. THOMSEN: Once again, I'm Greg Thomsen. I'm the Project Manager for the Bureau Land Management on this project. And what I'd like to do is just briefly explain to you what BLM's role is in this project.

Chevron submitted a right-of-way application to construct and operate a solar generating facility on land that's managed by the Bureau of Land Management.

Our current plan for this area potentially allows the development of an energy resources like this through a plan amendment.

BLM, you've probably been hearing a lot in the media, BLM is committed to sustainable energy development through our policies and orders after a thorough environmental analysis.

Both the United States from the president on down as well as the state of California have made commitments to develop renewable energy. And some of this will likely occur on land that's managed by BLM.

We realize there are many different types of renewable energy that you're hearing about. There's solar, there's wind, there's geothermal. And we realize that there's a number of different locations where these facilities might be sited.

Tonight what we want to talk about, the purpose of this tonight is to talk about this specific project which is for BLM to arrive at a decision down the road on whether or not to allow Chevron's application that is for a specific location and also for a specific type of energy which is solar photovoltaic.

If you look on the map on the screen the area that we're talking for and the area that BLM has received an application for is about eight miles east of here and it covers about 516 acres of BLM managed land.

Now I'd like to turn it over to Ralph Hollenbacher from Chevron to talk about the project.

MR. HOLLENBACHER: Thank you Greg. I work for Chevron Energy Solutions. For those of you who aren't familiar, we are a division of Chevron USA which is the oil company.

Although Chevron Energy Solutions the -- can you hear? I work for Chevron Energy Solutions which is a division of Chevron USA, namely the oil company.

Chevron Energy Solutions is very actively involved in energy efficiency and photovoltaic projects for a wide range of public institutional customers as well as Chevron itself.

Energy Solutions has offices nationwide, probably about 400 people. We are the largest installer of PV systems in public institutions in California with over 25 megawatts of rooftop, carport-type installations.

What we're looking at here as Greg indicated is a site at the corner of Foothill and Santa Fe Fire Trail which is about eight miles east of Lucerne Valley on 247.

It's a 516 acre property in what's, really kind of a rural area out there (speakers from audience requesting lights to be dimmed).

Should I use the other one?

MR. PLUMPTON: Ralph can you kill the lights please right behind you.

MR. HOLLENBACHER: Oh, it's the lights? Okay. The map, sorry for the map being kind of gray. We took a Google Earth Map and there is 247 coming across into Lucerne Valley.

This is Santa Fe Fire Trail. This is Foothill Road coming across. Right at the corner of Foothill Road and Santa Fe Fire Roads where we would interconnect with the Southern California Edison 33 kV line that runs down Foothill Road.

The project will be built in two phases. The first there are 516 acres and that's probably enough land to support about 45 megawatts of solar photovoltaic plant.

The first phase would be 20 megawatts electric. A megawatt is about a thousand kilowatts and generally people, a good metric is that the maximum load in a home is usually around a kilowatt. So that's enough for about twenty thousand homes.

We're proposing to start construction in a kind of metrics to the project. We're proposing to start construction in late 2010.

Overall project costs to be something like a hundred million dollars with about twenty million dollars in local content.

Peak construction force of about 40 workers. Permanent work force of two workers.

Water use, we're estimating will probably be no more than ten thousand gallons a year. It depends on how much we have to wash the panels if we have to wash the panels.

The technology we're looking at is photovoltaic, thin-film photovoltaics which is, is a fixed tilt meaning that the panels are fixed at a tilt angle of 20 to 30 degrees facing due south.

So if you're looking, that's the south, from the south you'll see the blue of the panels.

Probably they're maybe 18 inches to two feet off the ground at the low point. At the high point they're something less than six feet off the ground.

Here's the backside of the panel. The way the panels are installed, we'll be driving posts into the ground and building a rack on the posts to support the panels.

And tried to put together an artist's simulation. And it's pointed out to me that the land should be brown and not green or tan (laughter). Poor choice of color but I'll have to talk to my consultant about that.

There again is Santa Fe Fire Trail and Foothill Road. What we would be doing, Zircon Road we would square it off. But Zircon Road would remain open and it continues down through there:

You think that --

MR. PLUMPTON: Is it better with the lights off then? Okay.

That's a little bit about the project, now a little bit of why we're here.

You know that the BLM is preparing an Environmental Impact Statement to analyze and disclose the effects from the project.

So this is all about providing this level of project overview to allow you, the public and interested parties to provide the BLM with information that would be relevant to its purposes in analyzing and disclosing project effects.

So the BLM will obviously use this information to, you know, run the project through this environmental analysis and satisfy the processes that are required pursuant to NEPA one of which is coordinating the comment process to satisfy the public involvement that is needed under section 106 of the National Historic Preservation Act for example.

My company, E&E is assisting the BLM in preparing its EIS for the project. The Barstow BLM Office is the lead NEPA agent.

The EIS process is going to follow roughly five course steps. It begins with scoping which starts with the Notice of Intent.

This gets published and distributed to federal, state and local agencies and other interested parties and really begins the scoping process.

The scoping process is 30 days long within which there are two public meetings. Tonight's here in Lucerne Valley and tomorrow night's in San Bernardino.

Next comes the Draft EIS which the BLM will prepare as well as an amendment to the California Desert Conservation Area Plan.

And then this goes out for public review and comment which is the next main phase.

The Draft as well as the Plan Amendment will be available for public review during a 90 day comment period during which there will also be two more public meetings.

The Final EIS is then prepared which largely provides both the public's, a synthesis of the public's comments and how the EIS and the BLM responded to those comments.

Following this the Record of Decision is prepared after both a 30 day protest period and a 30 day governor's review period which are run concurrently.

So the schedule for the EIS as best as can be told at this point, the Notice of Intent was published on July

23rd, scoping then runs from July 23rd to August 22nd.

The Draft EIS and public comment period includes the 90 day public review period and that's anticipated on the current schedule for later this year.

The Final EIS can't be determined at this point because the mandated intervals must happen according to the end date of the proceeding phase.

So the Final EIS schedule can't be determined at this point but the Record of Decision comes 60 days after the Final EIS.

So, once again, the objectives of this entire process are to allow the public to provide BLM with their information relevant to the analysis and to identify their concerns so that the BLM can identify a reasonable range of alternatives to include in the Environmental Impact Statement so that it can openly and adequately analyze those impacts from both the proposed project and the alternatives.

And this allows the BLM to provide an adequate and defensible document to its own decision makers to render that decision in the Record of Decision.

So, again, we're here to solicit your input on the project. Please recognize that as you provide input, the more specific that you can be the easier and the more helpful it'll be for us.

The easier it will be to incorporate that input into a synthesis of the public's comments. For example, if possible rather than voice concern over biological resources, if you could name the biological resource that you have a specific or concern over it'll really facilitate incorporating comments accurately and completely.

Once again, just a really quick reminder, please if you'd like to speak fill out a speaker card. Again, understand that this becomes part of the public record.

We will take speakers in the order in which they filled out a speaker card. And we'll allow you to fill out a speaker card as long as we can keep the comment session open.

Kindly limit your comments to three minutes. If there is enough time after everyone has had a chance to comment we can, and we've got time remaining, we can allow people to provide multiple comments.

And if there's time and we've still got the room after the conclusion of this we can have an informal one-on-one question and answer session around the posters and in the back.

And, once again, just as a reminder, if you'd like to provide more extensive comment please consider taking a comment card which you could then mail or fax back in.

And with that I'll turn it back over to Greg.

MR. THOMSEN: Okay. Well with that then, you want to pull up the lights and we can get started with comments.

Paul Tony Malone.

MR. MALONE: Right here. Okay, my name is Paul Anthony Malone, Tony Malone to most of this community.

I teach renewable energy at the college, Victor Valley College.

I'm very much in favor of renewable energy.

What I'm not in favor of is this kind of corporation, Chevron.

Chevron several years ago made a commitment and a contract with Victor Valley College for a 1.5 megawatt wind turbine.

What they did, what the college did is they went ahead and they had to fight the powers that be, the Spring Valley Lake and their property association et cetera.

And then finally they got it by their board et cetera. They funded it. And then about a half a year later Chevron turned around and said, no, we're not going to do it.

They didn't give us any kind of, you know, any kind of important reason why they're not going to do it but I'll tell you I really do think that, you know, what they did was wrong and how they did it was wrong.

Because we were counting on it for a school to be able to teach, you know, renewable energy with wind turbines. A 1.5 megawatt is pretty good size.

And with them going in around here we would have been able to teach that.

Several of us teachers went down to schools in Cerritos to be able to learn how to, you know, teach that. We got information et cetera.

What Chevron did was wrong. Now if it was another company I would say, go for it. Thank you.

MR. PLUMPTON: Thank you.

And just as a reminder we're going to try and limit our comments to three minutes. At the two minute mark we'll hold up the yellow card and at three minutes, just to ensure that everybody who wants to speak can, we'll hold up a pen (laughter).

Larry Mayer, please.

MR. MAYER: My name is Larry Mayer and I also support renewable energies. I had a question as to you're going to use the Foothill Road transmission lines for electricity? Are you going to add anymore power poles to it?

MR. HOLLENBACHER: No.

MR. MAYER: No. So they'll be significant. It'll be enough to handle all the energy.

MR. HOLLENBACHER: It'll be sufficient. That will be sufficient.

MR. MAYER: Okay.

MR. HOLLENBACHER: What's there.

MR. MAYER: All right.

MR. PLUMPTON: Jeff Arnold.

MR. ARNOLD: My name is Jeff Arnold. My question is have you guys looked at any other possible placements for this solar generating plant instead of around here. Because you guys have also got an idea for wind turbines, you know, coming in out here.

MR. PLUMPTON: That's probably best left for after the comment session. What we're looking for here is comments. We want to hear about concerns, issues --

MR. ARNOLD: Okay. One big concern, okay, you guys get this thing put in, get it up and operating, what about the dust? You guys are going to be opening up over 500 acres. How much of that is going to be re-covered and resealed with the fungus that naturally grows out here under the topsoil or just under the top layer.

I'd like to know how you guys would be dealing with that because we get some hellacious easterly prevailing winds in here and you look at, you look north of town you can just see the dust clouds go across the desert.

My question is, have you guys even studied how many tons of dust or dirt will be blowing after you guys get this completed. Thank you.

MR. PLUMPTON: Thank you.

Harry Baker?

MR. BAKER: I'm Harry Baker. I'm with the Partnership of Johnson Valley. We are concerned about the cumulative impact of all the different projects that are hitting the desert, the wind generating plants, the solar plants, all of them and the effect they will have on recreation and on the quality of life in the desert.

I share the concern of the gentleman before me about the dust. And I'm also concerned about the dust on the road. For example, on Santa Fe Trail Road. Is that going to be hardened so that there will be no dust provided there so that you'll still have access or will some of the access be curtailed because of dust?

And also, further on down the line that the dust that is generated by the cement plants and that, will that have an impact on the solar plants? Thank you.

MR. PLUMPTON: Thank you.

Glen Davidson.

MR. DAVIDSON: He just expressed my concern.

MR. PLUMPTON: Thank you.

Ray Pessa?

MR. PESSA: I'm Ray Pessa from Yucca Valley also a member of Partnership for Johnson Valley, Friends of Giant Rock. I appreciate the conflict that BLM has with the mandate from the Department of Energy to push through projects, renewable energy and their conflict with their mission statement to preserve land for the public.

That's the big picture question and concern I have. All these projects that are lined up along 247 all the way to Landers.

I'm wondering if those things are going to be potentially tied in with this unit in some way if that's possible that that might be an SCE question.

And then a more direct basis I want to know, you said, 10,000 gallons of water per year don't sound like very much to me. Are you going to be using local water systems from the community or are you going to drill your own wells or how are you going to come up with that water and is that actually realistic? Thanks.

MR. PLUMPTON: Thank you.

Gary Hartfield?

MR. HATFIELD: It's Gary Hatfield. I'm here representing myself but I am a member of the Society for Conservation of the Bighorn Sheep.

And the Society is concerned primarily with Bighorn Sheep. We're volunteers for the California Department of Fish and Game.

We build and maintain wildlife drinkers all over the desert.

And we are, you know, advocates for sheep and, of course, for their habitat.

And we have our Bighorn Sheep up in the San Bernardino Mountains and we have herds out here in the Ord mountains and many of the ranges further.

I too am concerned about the cumulative effects of all of these projects.

I went out here and you can see the mural on the side of the building and they don't show any imprint of man, there's an eagle and some wild horses and beautiful country and that's why people like to move to the desert.

And that's why, you know, I'm down at the desert. I'm a hunter/conservationist and I've been on top of all these mountains and I enjoy the view and don't know that it's going to be the same with windmills on the ridges and mirrors reflecting skyward.

And, but I know you want the remarks to be site-specific and I don't know that much about that area other than to say that looking down the road this whole valley is liable to be developed. It'll fill in.

BLM land is open land, the kind of land where things do live.

And sheep may need to migrate from one range to another. If you fill up the BLM land with industrial complexes then it's going to be more difficult to do.

So that's the main concern. I don't think you can remove the cumulative effect of all of these proposals and this land rush and this race for renewable energy. And it kind of saddens me because this is so obviously facilitation of development, the pressure coming from, you know, our elected leaders and so forth at a time when much of the world has no desire to cut back on their CO2 emissions.

They're developing their economy. And we're kind of standing alone in our economy isn't doing that well.

And we're going to trade off as the other gentleman says this real treasure of the public land resource and animals that inhabit it for our future for a questionable source of energy.

And you guys are engineers. Twenty years from now this thing will probably be obsolete you know. And then what are you going to do?

So I won't take anymore of your time but, you know, you should find out about wildlife use of that area and consider how valuable that land might be in the future.

I'm also curious about, I've not been there, will the Santa Fe Trail Road remain open for public access?

Okay, thank you.

MR. PLUMPTON: Thank you.

D'Anne Albers.

MS. ALBERS: Good evening and thank you for having a scoping meeting. My name is D'Anne Albers and I'm a local resident in Twenty-nine Palms.

And I'm here representing Defenders of Wildlife and the Sierra Club Desert Committee Energy Committee.

Just to let you know that we do support renewable energy as long as it is not environmentally detrimental.

Some of our concerns have already been addressed here but I just wanted to go on record that we are concerned that any new transmission corridors would come about and I understand that the first 20 megawatts is okay and then if the second phase there might need to be additional transmission.

We are also concerned about the cumulative impacts as well.

Also water use which you've addressed and make sure that any of the biological resources surveys and any mitigation would be handled.

And we'll be providing both the Energy Committee and Defenders of Wildlife will be submitting more detailed comments. Thank you.

MR. PLUMPTON: Thank you.

Chad Burlin.

MR. BURLIN: How are you doing? My name is Chad Burlin. I'm a local resident here of Lucerne Valley. I do support renewable energy, you know, as it is not environmentally detrimental.

I have two questions. The first question is I saw you're going to hire something like 40 workers at like peak production and two permanent workers. I was wondering how many of those workers let's say would be local residents of Lucerne Valley?

And my second question is as far as let's say when this project is completed, how many like tax dollars would actually go to Lucerne Valley?

How much would Chevron, let's say, donate to Lucerne Valley in terms of, you know, let's say, community projects and so forth?

MR. PLUMPTON: That may be a questioned better asked and answered afterward. Again, we're looking for comments, but to address one of your concerns, the Environmental Impact Statement will have a socioeconomic analysis done. It's part of the NEPA analysis.

So hopefully that will address that concern.

MR. BURLIN: All right. I thank you.

MR. PLUMPTON: Thank you.

Jim Meshard?

MR. MESHARD: Good evening. First of all I think that this project, you know, should not happen. Okay, I'm against it.

I don't live far from it so that's, I got a dog in this fight I'd guess you'd say.

I think we're as many of the other people have said we're unduly over-impacted by all of these so-called wonderful solar and other projects.

They're talking about building like 100 foot tall solar mirrors out here just to a little north of here.

And then they're thinking about putting windmills in another area. And now they're planning of putting this here.

You got perfect stuff over here at Highway 58 and 395. You've got a huge solar project there, all the infrastructure is there, the dirt is there, the BLM owns probably all of it. You've got Edwards Air Force Base there, millions of acres.

The BLM has got millions of acres east of Yucca Valley that they can do this stuff. And I just think that Edison is just trying to take advantage of the close proximity to save running power lines so far.

They're planning on running another line all the way from Morongo Valley all the way across our mountains again. And they're probably want to hook this into that.

We're just really being hit here. And over in that area I ride my motorcycle and stuff over there and things and I've seen Kangaroo Rats over there. I've seen tortoises over there. I've seen other animals that, you know, I've seen the goats and the bobcats come down.

What is this going to do to them? And so I'm just thinking that you guys ought to look at other areas and less populated areas and if, you know, you want to live in Tehachapi with the wind mills or over in Desert Hot Springs with the wind mills over there and look out your window and just see whoosh, whoosh. Well I don't want to see it.

Thank you.

MR. PLUMPTON: Thank you.

Roger Peterson please.

MR. PETERSON: Good evening. My name is Roger Peterson and I thank you for holding this meeting.

I have a few comments. In order to support a project like this there would have to be some pretty good assurances, number one is that you're only planning on tieing into the SCE line, you're not going to bait and switch and then want to tie into the proposed LADWP line that is a huge battle that we're trying to stop.

As a previous just mentioned because of all the, what they're doing to our, it'll be blight out here.

I am pleased that they're low profile. Another proposal north of town here was 300 foot tall solar panels on thousands of acres which would look like the New York skyline. So I'm happy about that.

And Santa Fe Fire Road you said was going to stay open. A couple of questions some people brought up is I'm concerned about dust mitigation also. That's 518 acres that are cleared.

Now are you going to have paved roadways for access between there or are you going to leave it dirt? That would be something that I think the BLM needs to look at very closely for air quality.

Also the Mojave Desert is riddled with earthquake faults so I'm just curious, you know, if the BLM is going to require a geological study of the area to make sure that it's stable enough. We have a lot of unstable land out here.

Also that in the studies they should be looking at that area over there is prone to flash flooding. I mean flash flooding enough to close the highway.

And so now you're going to take 5,000 or, excuse me, 500 acres and try to divert the water around that. Your plans need to show how you're going to mitigate that, the potential for flash flood and erosion and damage that that will cause okay.

Also I would think the BLM on all these projects should be required, because they all have a life, when the life is over the project will go away and you should require a payment bond of 100 percent figured at what it'll probably cost in 20 years or whatever the life of the project is to restore it back to the original desert okay, to renew it.

So I'm, and I'm concerned about the cumulative effect. You know if this was a stand alone project I'd be all for it. You can't see it from until you're right on top of it on the highway, Santa Fe Fire Road is open to give us access into the land behind it but the problem is BLM is the cumulative effect of all these projects.

And this place is going to be disgusting if it looks like Tehachapi or Desert Hot Center, Desert Hot Springs. That's what it's going to look like if the federal government allows all these projects that are proposed to come in.

Last I heard there was a hundred wind mill projects or wind generator projects. And I haven't even heard the number of solar projects. Thank you very much.

MR. PLUMPTON: Thank you.

Claudia Sall.

MS. SALL: Hi, my name is Claudia Sall. I'm from Pioneer Town, California and I've been following this, this proposed project for several reasons.

One of them, of course, we're all concerned about these cumulative effects that are on, keep speaking about. And part of this is because BLM has not done any wildlife connectivity studies. They're being left to private non-profits to do. For instance, Defenders of Wildlife and the Wildlands Conservancy.

So we really don't know what the movement is that's going to be interrupted by this first solar project. And looking at your solar programmatic you're planning a lot more along this 247 corridor.

And so basically you may be cutting off a whole corridor there and not even knowing until after the facts.

So we have urged that you do a full cumulative study of the desert and not just the solar programmatic to include things like the Ivanpah Airport and some of the wind projects and some of the really developments that are happening in the California desert.

And that hasn't been done. And so we're piecemealing that. And we're very concerned about that.

The other thing, in your bulletin you talk about a possible CDCA Amendment. You talk about a will be a CDCA Amendment. We're really concerned about what that is.

Because obviously as it was mentioned before Green Path North is being planned to come through here and this project is right in that CDCA Amendment possible for that alternate corridor.

And we need some understanding of what your CDCA Amendment is going to be. And it's not clear on anything that you have put out what it is going to be.

Word in here just in here on the floor before the meeting says it's just to acknowledge that this is a renewable energy project but nothing in your information so far has said that. So, we need some clarification on that.

Of course, quality, the air quality is the big concern. We have lots of land, little water and probably promise of a lot less with climate change coming in. So quality of, air quality and dust mitigation are always a big concern on these.

And, finally one of the last things I'd like to bring up is what some of the folks talk about with the disturbed land. We'd like to see projects done on disturbed land. And it seems like everyone always goes back to BLM because this is basically free land to corporations.

And so that always seems to be where these projects line up. But it's interesting that BLM has recognized that disturbed lands are something they should be looking at because they've launched a project in Arizona to start doing it.

And my question is if we can do it in Arizona where there is not as many projects being on the chopping blocks as there is in California why didn't you start here. It should have started here not a question. But it should have started here looking at disturbed lands rather than starting with fairly pristine, ungraded land over off of Fire Road.

And although the gentleman said it was brown out there one of the oldest living plants, the Creosote plant lives out here. It has a small reserve and it's covered in this, where this project is being sited.

So definitely underestimated what this project, where this project should be sited and thinks it needs to be removed to a different area. Thank you.

MR. PLUMPTON: Thank you.

April Sall?

MS. SALL: Good evening, thank you for the opportunity to speak tonight.

And I applaud Chevron Energy Solutions in proposing a renewable energy project. Although we do have concerns about the specific location and some of the transmission questions.

I am a conservation director for the Wildlands Conservancy. I also chair the California Desert Coalition.

And both organizations are highly in favor of renewable energy.

We support the greening of America's power supply and of California's certainly and feel that there's a right way to do this. And certainly a wrong way.

And that's part of the feeding frenzy that is occurring throughout the desert for public lands.

And I think that we support projects that are green in application and there's many criteria to that.

And there's actually several groups including Sierra Club and Defenders of Wildlife and Center of Biodiversity and the Wildlands Conservancy who have worked together and the Nature Conservancy on siting criteria for renewable energy projects.

And that is publicly available to agencies and to several of the industry groups who we have already been talking with.

There was a project brought up earlier that was proposed by Mission Energy, Edison Mission Energy. And I understand that project is being proposed on disturbed land and private land.

And I would like to say that the environmental community supports projects being sited on disturbed lands over pristine habitat and pristine public lands.

We're very concerned about the transmission tie in issues. You've heard here from many individuals tonight.

There's great concern over LADWP's proposed Green Path North Project. A 500 kV transmission line that is proposed along the contingent corridor and the California Desert Conservation Area that has many solar proposals and a few wind proposals along its alignment through the high desert here and from Morongo Valley, actually Desert Hot Springs, out to Hesperia.

And so any projects that would possibly facilitate that transmission line are of great concern and of opposition to many of the groups here.

Also have some concerns and questions about the, if you're going to be blading the land or if it's going to be mowed, what the water usage will be and dust mitigation issues.

And the general discussion about cumulative impacts of these projects as you're well aware there is a land rush in the California Desert for over 1.7 million acres depending on which spreadsheets you're looking at for the BLM.

And technology is rapidly changing as we all know. And some of these projects will be obsolete by the time they are in line.

And photovoltaics is possibly not in that category but it's very important to think about the cumulative effects of the desert and how we're going to reuse the land that these projects are being sited on when that technology is obsolete so that we are maximizing the use of the lands and not disturbing anymore pristine habitat.

Mother Nature is not making anymore pristine lands. So we need to be careful and make thoughtful decisions about what we have.

And also last thing is that in regards to changing technology we feel that distributed energy and local rooftop

PV is really the way of the future.

And certainly all of our desert preserves have onsite renewable energy and most are off the grid. So we support Chevron's use of rooftop and parking lot PV structures that we saw in the photographs. Thank you.

MR. PLUMPTON: Thank you.

Were there any other speakers?

Okay, with that I'll turn it back over to Greg.

MR. THOMSEN: Well I also would like to thank all of you for coming out tonight. I mean the good showing shows clearly that you care a lot about the land out here and about this project so, thank you.

Your comments will definitely help us write a better Draft Environmental Impact Statement as we analyze this proposed project.

So as it's been said, if you have any additional comments please submit them anyway that you choose whether it's through email or through regular letter or any other means. Definitely putting something in writing is important though.

We do look forward to seeing you again. After we've completed the Draft Environmental Statement we'd like to sit down with you and have you help us review it at that point.

We anticipate that would probably be towards the end of this year.

With that we're actually running a little bit early tonight so certainly we'll all be around for awhile. So if you have any questions, we deferred a few of your questions until after the meeting. And so we'd certainly like to entertain those now.

So thanks again everybody.

(Thereupon, the July 29, 2009, Public Scoping Meeting of the Bureau of Land Management was adjourned at 7:48 p.m.)

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CERTIFICATE OF REPORTER

I, TROY RAY, an Electronic Reporter, do hereby certify:

That I am a disinterested person herein; that the foregoing Bureau of Land Management, County of San Bernardino, Public Scoping meeting was reported by me and thereafter transcribed into typewriting.

I further certify that I am not of counsel or attorney for any of the parties in this matter, nor in any way interested in the outcome of this matter.

IN WITNESS WHEREOF, I have hereunto set my hand this 11th day of August, 2009.

Troy Ray
Official Reporter

MEETING

BUREAU OF LAND MANAGEMENT

COUNTY OF SAN BERNARDINO

PUBLIC SCOPING MEETING

LUCERNE VALLEY SOLAR PROJECT

FAMILY LIFE ENTERPRISE CENTER

CONFERENCE ROOM 13

1505 WEST HIGHLAND AVENUE

SAN BERNARDINO, CALIFORNIA

THURSDAY, JULY 30, 2009

7:00 P.M.

Reported by: Troy Ray

PETERS SHORTHAND REPORTING CORPORATION (916) 362-2345

APPEARANCES

Lynette Elser, Bureau of Land Management

Mickey Quillman, Bureau of Land Management

Greg Thomsen, Bureau of Land Management

Roxie Trost, Bureau of Land Management

Juliet Don, Chevron Energy Solutions

Ralph Hollenbacher, Chevron Energy Solutions

Erec M. DeVost, Ecology and Environment, Inc.

Dave Plumpton, Ecology and Environment, Inc.

PUBLIC APPEARANCES

Dan Musetti

Alan Manee

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PROCEEDINGS

MR. PLUMPTON: I'm Dave Plumpton. I work for Ecology and Environment. We are an environmental consulting firm working on behalf of the BLM. And I'll try and facilitate the discussion tonight.

With us also is Roxie Trost who is leading the effort for the BLM, Ralph Hollenbacher from Chevron Energy Solutions, and Greg Thomsen also with the BLM.

And I suppose I should let you introduce yourselves and a little bit about your role here.

MS. TROST: Okay, I'm Roxie Trost and I'm the Field Manager for the Barstow Field Office.

And my office has the overall responsibilities for this project.

So afterwards if you'd like to talk with me or any member of the staff please do so. We can hopefully answer any questions or any concerns that you might have.

Also with us we have Lynette Elser from the BLM. She is the NEPA lead on this project.

And we have Rich Rotte who is the realty specialist. And he's also the realty lead on this project.

We also have Juliet Don who is from Chevron. She's the public affairs representative with us here tonight.

And I think that's it.

MR. PLUMPTON: Okay. Well a little bit about the agenda. We had a brief open house for some questions and answers. We have about a 20 minute presentation planned during which we'll provide an overview of the project and that will lead into a comment period.

Please, if you haven't yet signed in at the door there's a sign-in sheet. And that's really the best and only way we have of tracking attendance at these meetings.

We also, as you know, have a comment period. And if you'd like to provide a comment please fill out a speaker card.

If you would like to provide comments but don't wish to speak there's also a comment form that can be used if you'd like to mail or fax in your comments from home later or leave us more extensive written comments here.

Please understand that this information becomes part of the administrative record for the project. So the information that you provide will become public.

Please hold your comments to the comment period as well. And, as I said, this is all about getting your input on the project. You live here and you've got issues that you'd like to address, concerns that you'd like to voice. And that's what the comment period is about.

But we'll hold question and answer-type dialogue for after the session if there's time. And it sure looks like there will be.

So thanks very much for attending. Roxie, do you want to provide a little bit more about, next slide please Erec. Okay, there we go. Or is this Greg?

MR. THOMSEN: Greg.

MS. TROST: This is Greg.

MR. THOMSEN: I'm Greg Thomsen, also with the Bureau of Land Management. I'm the Project Manager for this project, representing BLM.

And what I'd like to do initially is just talk about what is the Bureau of Land Management's role in this.

Chevron file an application for a right-of-way with us to construct and operate a solar generating facility on land that's managed by the Bureau of Land Management.

Currently our land use plan for this area allows for, potentially allows for, renewable energy projects with an amendment to the plan.

As an agency BLM is committed to sustainable energy development, which is through our policies and through our orders, after we can do a thorough environmental analysis.

And I'm sure that you have been hearing that the both United States and the state of California have committed to develop renewable energy. And some of this, no doubt, will occur on lands that are managed by BLM.

We realize that there are a variety of types of renewable energy. There's geothermal, there's wind, there's solar and we also realize that there's quite a variety of locations where these facilities might be sited.

So the purpose of the project, or this project though, is to make a decision, for BLM to make a decision on Chevron's application, which is for a specific location and a specific technology, which is solar photovoltaic.

And then just briefly, if you look at the map up there you'll see that the application area that BLM has received proposes to develop 516 acres of federal land managed by BLM.

And it's located about eight miles east of the community of Lucerne Valley.

At this point I'd like to turn it over to Ralph Hollenbacher from Chevron to tell you more about the project.

MR. HOLLENBACHER: Thanks Greg.

First of all I'd like to introduce you to Chevron Energy Solutions who I work for. Chevron Energy Solutions is the sustainable energy arm of Chevron USA, meaning the oil company.

We've worked with public sector clients as well as with Chevron Corporation in a number of energy effeciency and photovoltaic projects.

Right now Chevron has about 400 professionals in offices nationwide, about two dozen locations across the US.

We are currently the largest installer of PV systems in public institutions in California with over 25 megawatts of PV installed, mostly in rooftop and carport applications.

The project itself, as Greg indicated, is eight miles from the town of Lucerne. Can everyone hear me?

To orient you, the town of Lucerne Valley is here. This is 247 or Old Woman Springs Road. And about eight miles down Old Woman Spring Road there's Santa Fe Fire Trail. And Santa Fe Fire Trail runs down through here. A cross road is Foothill Road. And that runs along here. And this is the project site, the proposed project site in green. It's 516 acres.

The transmission interconnection, there's a 33 kV, Southern California Edison line running down Foothill Road. And we would simply interconnect with that line at the corner of the project site.

And the power would flow back to the Cottonwood Substation which is at the corner of Cap Rock Road and 18.

The roads in the project site and the project development, we would upgrade the Santa Fe Fire Trail and reroute, there's another road here, Zircon Road. We would reroute that and kind of square it off a little bit but both roads will remain in operable at all times, accessible and operable, you know, during construction and after completion of the project.

In all the 516 acres, we project that that could handle about 45 megawatts of solar PV. We are looking at a thin-film PV, fixed-tilt application.

The first phase that we're looking at would be 20 megawatts electric. We're looking for construction to start sometime in the fourth quarter of 2010.

Project metrics, it's, the first phase would be about a 100 million dollar project. We're estimating about 20 million in local content.

Peak construction workforce, 40 workers maybe more depending on how the construction is organized.

Permanent workforce of about two workers.

Estimated water use of about 10,000 gallons a year. And that is merely to, you know, clean off the, you know, remove dust from the panels if needed, if required.

Here's a view of the panels. And the panels will be facing south. So this face, the face of the panels is facing south, due south.

And it's at a fixed-tilt of something between 20 and 30 degrees. This looks like a 30 degree tilt here.

And this is the, this is the back of the row which simply shows the supports are simply H-beams driven into the ground, typically H-beams driven into the ground. And a frame is built on the H-beams.

And we gave a visual simulation of what the site would look like at full build out.

I've been told that it's never green out in Lucerne Valley so the background should be brown. But the person that drew this was in Minnesota (laughter). Occupational hazard.

MR. PLUMPTON: Okay that's a little bit about the project. Now a little bit more about why we're here.

As you know BLM is preparing an Environmental Impact Statement for the project. And this is all about providing you with an overview of that project to allow you an opportunity to voice any concerns that you might have.

And the BLM will obviously use these concerns and other information provided to help refine the range and scope of, the alternatives are also analyzed along with the project itself.

And also to satisfy other processes such as the public involvement process for the National Historic Preservation Act.

A little bit more about the environmental review that'll take place. The preparation of the EIS will really follow five rough phases.

Scoping, which we're in now, was initiated with the publication and distribution of the Notice of Intent. This was distributed to state, federal and local agencies as well as interested parties. And as I said, really initiates the public scoping process ,which lasts 30 days and includes two public hearings. Last night's was held in Lucerne Valley and, of course, tonight.

The next step is the Draft Environmental Impact Statement and amendment to the CDCA, California Desert Conservation Area Plan.

When this is completed it too goes out for public review during a 90 day public comment period which, during which there will also be two public hearings to review the Draft.

Upon receipt of all public comments on the Draft the Final EIS will be put together, which includes a synthesis of the public's comments as well as how those comments are addressed in the Final.

Following this comes the Record of Decision. This includes a 30 day protest period and concurrent 30 day governor's review period.

After that the BLM will, decision makers will issue the Record of Decision for the EIS.

So the schedule as it is now includes the Notice of Intent which went out July 23rd, and again, it's a 30 day scoping period which will end August 22nd.

Next the Draft EIS and its own public comment period, again 90 days. So that's anticipated to end later this year.

The Final EIS really can't be determined now while some of those intervals are prescribed and fixed in length. When those intervals are initiated depends on the completion of the task that precedes that.

So the exact schedule for the later milestones in this process can't be predicted with accuracy at this point.

Obviously the objectives, again, are to allow you to comment and provide information on the project so that the BLM can identify the range of alternatives that should be included with the proposed project.

And a big part of that is geared at identifying ways that we could either avoid or minimize impacts associated with the project.

And, again, this is so that the BLM can render a full, open, honest and defensible environmental document for the decision makers use.

With that we're going to wrap up the presentation here and open it up to your comments.

Once again, just a couple of brief reminders and guidelines, if you like. We're interested in your comments. That's the reason for holding these scoping meetings.

But please do fill out a speaker card if you'd like to provide a comment. And, again, understand that the information on that card does become part of the administrative record.

I don't know how many speakers we'll have. But if we have more than one please provide your name clearly. Understand that a transcript is being collected of this meeting to provide a full record of the discussion that occurs here.

And, again, for any who would like to provide comments but not provide them verbally we do have comment cards that will allow you to write out your comments and either leave them with us or mail or fax them in later.

Has anyone filled out a speaker card and wishes to speak? Take your time.

At last night's meeting that was held in Lucerne Valley we had a turnout of at least 78 people. The sign-in sheet said 78 people and I think the head count was something a little over 110. So there was an awful lot of good, local participation.

We had a lot of really good comments. And then informal question and answer breakout sessions, if you like, that aren't captured in the transcript that's being collected but which allowed for a lot of information about specifics of the project. Thank you.

Dan Mussetti.

MR. MUSSETTI: Yes. Howdy.

MR. PLUMPTON: Thank you.

MR. MUSSETTI: You know I really didn't come here to comment in a negative way on it but, you know, this is BLM property and it's, to me I'm more interested in the environmental aspects of the property.

And it seems to me that this shouldn't affect animals very much if you could do something to leave the vegetation or separate them a little bit. Or if not, I mean, why couldn't this be warehouses and something else underneath it. Why does it have to be just taking a piece of desert and destroying it just for solar? Why couldn't it have more than just one purpose?

If we're going to lose some BLM land why not -- you know, if you can't do something to enhance the environment when we do it why we couldn't do something that would, be used for something else?

Because there's a lot of other things that could be used underneath this. And that's the only comment I really have on it.

MR. PLUMPTON: Thank you.

Alan Manes, please.

MR. MANEE: M-A-N-E-E, Manee. Or for six and a half years in the Army, Manny (laughter). Well it's just not Manes.

MR. PLUMPTON: Thank you.

MR. MANEE: Good evening.

Just a couple of quick questions. I'm familiar with wildlife biologists for the state of California. I also run a private consulting firm.

This is probably not really critically important. I have two questions. The first one is not critically important.

Mr. Thomsen you're a private consultant that has been --

MR. THOMSEN: No, I'm a Bureau of Land Management employee.

MR. MANEE: Okay. That was my confusion. That's very minor. That's not really important. I'm just curious.

MR. THOMSEN: Okay.

MR. MANEE: My question is, is that, what is the category of, first part of the question, it's a four part question. First thing is, what is the category now for Desert Tortoise in this area? Is it density category 3, 4, category 1? What is the category for this property in terms of the occurrence of Desert Tortoise? Does anybody know?

MR. THOMSEN: It's Category 3 Habitat. There have been surveys done on the ground, you know, looking for tortoises. So it is tortoise habitat.

MR. MANEE: I'm sure it's ongoing. You probably have been doing some work on it all along.

MR. THOMSEN: Right. It's actually been completed. So it's -- tortoise habitat is not critical habitat but it is tortoise habitat, Category 3.

MR. MANEE: Right, I know, Category 3 is not critical.

What is the, who is the consulting firm, do you know?

MR. THOMSEN: Chambers.

MR. MANEE: Chambers did the work, okay.

Ddo you know roughly when the surveys were done? Just roughly. Were they started in the Spring?

MR. HOLLENBACHER: The Spring, February through May.

MR. MANEE: Yeah, when the vegetation appears --

MR. ROTTE: I think one of the, one of them was, one of the rare plants was done in June because it's a late bloomer.

MR. MANEE: It's a late bloomer, yeah. I know which one you're talking about. It didn't seem to be from just the scant look that I've seen from the aerial, looks like you have a very uniform topography.

You don't have any real drainages, per se. Is that correct?

MR. THOMSEN: That's right.

MR. MANEE: And, is there any occurrence or findings of burrows on the side at all?

MR. ROTTE: Which one?

MR. MANEE: Desert Tortoises.

MR. THOMSEN: There were some burrows and there were a few tortoises either on or adjacent to this site. And there will be a technical report that will be completed shortly. And then that will be, you know, some of the key information put in the Draft Environmental Impact Statement.

MR. MANEE: Okay.

MR. HOLLENBACHER: It's in the area of concern but not specifically on the site.

MR. MANEE: Right, so --

MR. HOLLENBACHER: They were looking for burrows, active burrows.

MR. MANEE: Right now you're just ballpark estimate would be there'd be minor mitigation for the removal of those species and maybe any plant species that you've located.

So you're not anticipating a great deal of mitigation on this property at this point.

MR. THOMSEN: Well you know there's different types of mitigation. There's compensation for loss of habitat as well as there's mitigation for any animals that are present. So certainly there will be potentially some of both of those types of mitigation for tortoise.

MR. MANEE: In the implementation and process of carrying out the responsibilities of BLM do you -- are you required, I know you are generally under NEPA, but are you required to look how far out that cumulative impacts could occur from other types of facilities or other types of proposed development as it addresses this site?

Are you required to go out a certain number of feet, miles, kilometers, whatever it is, to evaluate any other associated impacts?

MR. PLUMPTON: I think the best approach to doing a cumulative impacts assessment is to look at it by resource and apply the scale that makes the most sense for that resource.

I don't think that one size fits all for cumulative impacts assessment. But certainly we're going to, you know, reasonably foreseeable, is the test there.

And I don't know that we could really comment on the scale at which all other resource areas will be looked at for cumulative impacts at this point.

Does that answer --

MR. MANEE: I think it does. I don't completely agree with what you're saying. Cumulative impacts are always more significant when they're in higher densities.

So one of the first things that you'd look at, I would think, is at any other projects you know to be occuring within at least a half mile of this property or project.

Secondly, I think right now, and I've lost count, and I know BLM, like any other state or federal agency has regions and areas, I'm not sure where you go but this I think 36, if we take the deserts of Southern California, I think there's 36 active projects right now of similar or other type of facility, not necessarily all solar.

And I'm just concerned how that plays out in the big picture. But cumulative would always start with some area immediately surrounding the area. And it could be a half mile or mile, whatever. Because that would be more of a concern if you knew of projects that were anticipated or reasonably likely to be anticipated in the immediate area.

Now you do have other, like I said, because of so many solar projects that are out there you could even say in your district consider other additional projects.

I just was was wondering where you were on your thinking. And if it's too preliminary that's fine. It's just one of the concerns I have.

So basically that's all I have. Thank you so much.

MR. PLUMPTON: Thank you.

Okay, why don't we do that. We'll take a short break. Maybe we can get some question and answer going. And then if anyone would like there's plenty of time to submit additional comments. Thank you.

(Thereupon a short break taken off the record.)

MR. PLUMPTON: Okay. So we may close up the meeting here unless there are any other people who would like to provide comment. Has anybody else filled out a speaker card or does anybody else wish to provide comment?

Okay, well thanks very much for coming out. We sure appreciate your participation. And we will adjourn the meeting here at 7:37. Thank you.

(Thereupon the July 30, 2009, Public Scoping Meeting of the Bureau of Land Management was adjourned at 7:37 p.m.)

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CERTIFICATE OF REPORTER

I, TROY RAY, an Electronic Reporter, do hereby certify:

That I am a disinterested person herein; that the foregoing Bureau of Land Management, County of San Bernardino, Public Scoping meeting was reported by me and thereafter transcribed into typewriting.

I further certify that I am not of counsel or attorney for any of the parties in this matter, nor in any way interested in the outcome of this matter.

IN WITNESS WHEREOF, I have hereunto set my hand this 12th day of August, 2009.

Troy Ray
Official Reporter

Appendix E
Scoping Meeting Materials

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Bureau of Land Management (BLM)
Public Scoping Meeting
Lucerne Valley Solar Project EIS

July 29, 2009: Lucerne Valley Elementary School,
10788 Barstow Road, Lucerne Valley, CA
and
July 30, 2009: Family Life Public Enterprise Center,
Conference Room 13, 1505 West Highland Avenue, San Bernardino, CA

AGENDA

6:30 – 8:30 p.m.

6:30 to 7:00 p.m.	**Open House**	
7:00 – 7:20 p.m.	**Presentation**	
	• Welcome	Dave Plumpton, E&E
	• Introductions	Roxie Trost, BLM
	• Project Overview	Greg Thomsen, BLM Ralph Hollenbacher, Chevron Energy Solutions
	• Meeting Purpose	Dave Plumpton, E&E
	• Environmental Review Process	Dave Plumpton, E&E
	• Other Opportunities for Public Comment	Dave Plumpton, E&E
7:20 – 8:30 p.m.	**Public Comment**	**PUBLIC**
	• Closing Remarks	Greg Thomsen, BLM

Documents Currently Available		**BLM Documents are available at:** http://www.BLM.gov/ca/st/en/fo/barstow.html
For More Information		Greg Thomsen, BLM Program Manager, 951-697-5237

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Note: Before including your address, telephone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment, including your personal identifying information, may be made publicly available at any time. While you may ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. All submissions from individuals identifying themselves as representatives or officials of organizations or businesses will be made available for public inspection in their entirety.

Bureau of Land Management

Public Scoping Meeting

Lucerne Valley Solar Project EIS

Lucerne Valley, CA – July 29, 2009

SIGN-IN SHEET

Presentation starting promptly at 7:00 PM ***(PLEASE PRINT LEGIBLY)***

NAME	AFFILIATION	Mailing ADDRESS	PHONE	EMAIL	Do you want to be on the Mailing List?

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Bureau of Land Management
Public Scoping Meeting
Lucerne Valley Solar Project EIS
Lucerne Valley, CA
July 29 2009

Note: Before including your address, telephone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment, including your personal identifying information, may be made publicly available at any time. While you may ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. All submissions from individuals identifying themselves as representatives or officials of organizations or businesses will be made available for public inspection in their entirety

COMMENTS

Thank you for participating in tonight's Public Scoping Meeting on the Lucerne Valley Solar Project EIS

Your comments on the scope and focus of the environmental review are encouraged.

Name (please print legibly):

Affiliation (if applicable):

Phone: Email:

Mailing Address:

City, State, Zip:

COMMENTS:

What issues should be addressed in this environmental document?

Turn in Comments during this meeting or

Send comments to: BLM California Desert District Office, attn: Greg Thomsen, Program Manager, 22835 Calle San Juan de Los Lagos, Moreno Valley, CA 92553 or by e-mail at LucerneSolar@blm.com

COMMENTS *(Continued)*

Bureau of Land Management

Public Scoping Meeting

Lucerne Valley Solar Project EIS

San Bernardino, CA – July 30, 2009

Note: Before including your address, telephone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment, including your personal identifying information, may be made publicly available at any time. While you may ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. All submissions from individuals identifying themselves as representatives or officials of organizations or businesses will be made available for public inspection in their entirety.

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Bureau of Land Management

Public Scoping Meeting

Lucerne Valley Solar Project EIS

San Bernardino, CA

July 30 2009

Note: Before including your address, telephone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment, including your personal identifying information, may be made publicly available at any time. While you may ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. All submissions from individuals identifying themselves as representatives or officials of organizations or businesses will be made available for public inspection in their entirety

COMMENTS

Thank you for participating in tonight's Public Scoping Meeting on the Lucerne Valley Solar Project EIS

Your comments on the scope and focus of the environmental review are encouraged.

Name (please print legibly): ______________________________

Affiliation (if applicable): ______________________________

Phone: ____________________ Email: ____________________

Mailing Address: ______________________________

City, State, Zip: ______________________________

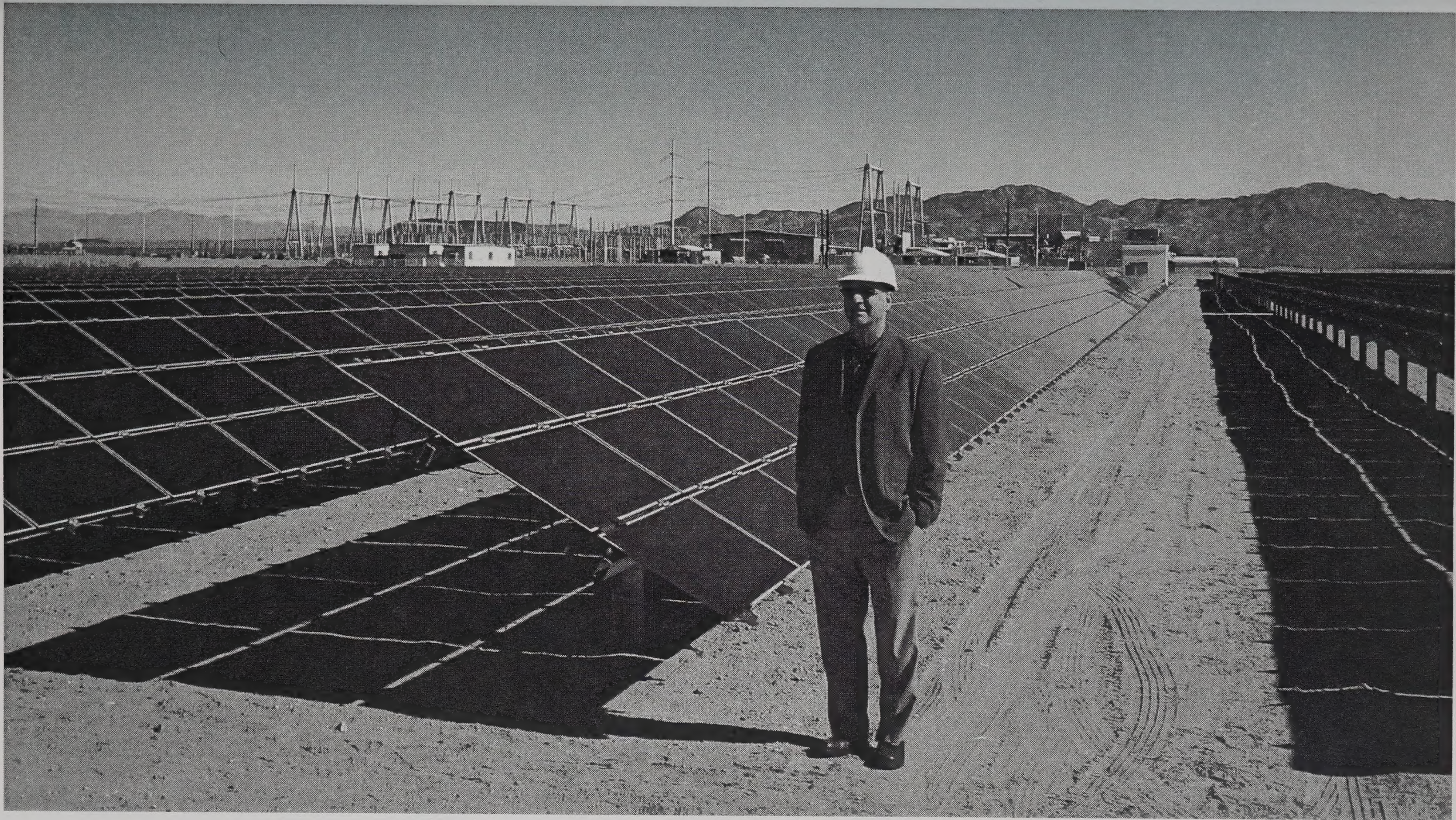
COMMENTS:

What issues should be addressed in this environmental document?

Turn in Comments during this meeting or

Send comments to: BLM California Desert District Office, attn: Greg Thomsen, Program Manager,
22835 Calle San Juan de Los Lagos, Moreno Valley, CA 92553 or by e-mail at LucerneSolar@blm.com

COMMENTS *(Continued)*



Example of ground-mounted solar field

Chevron

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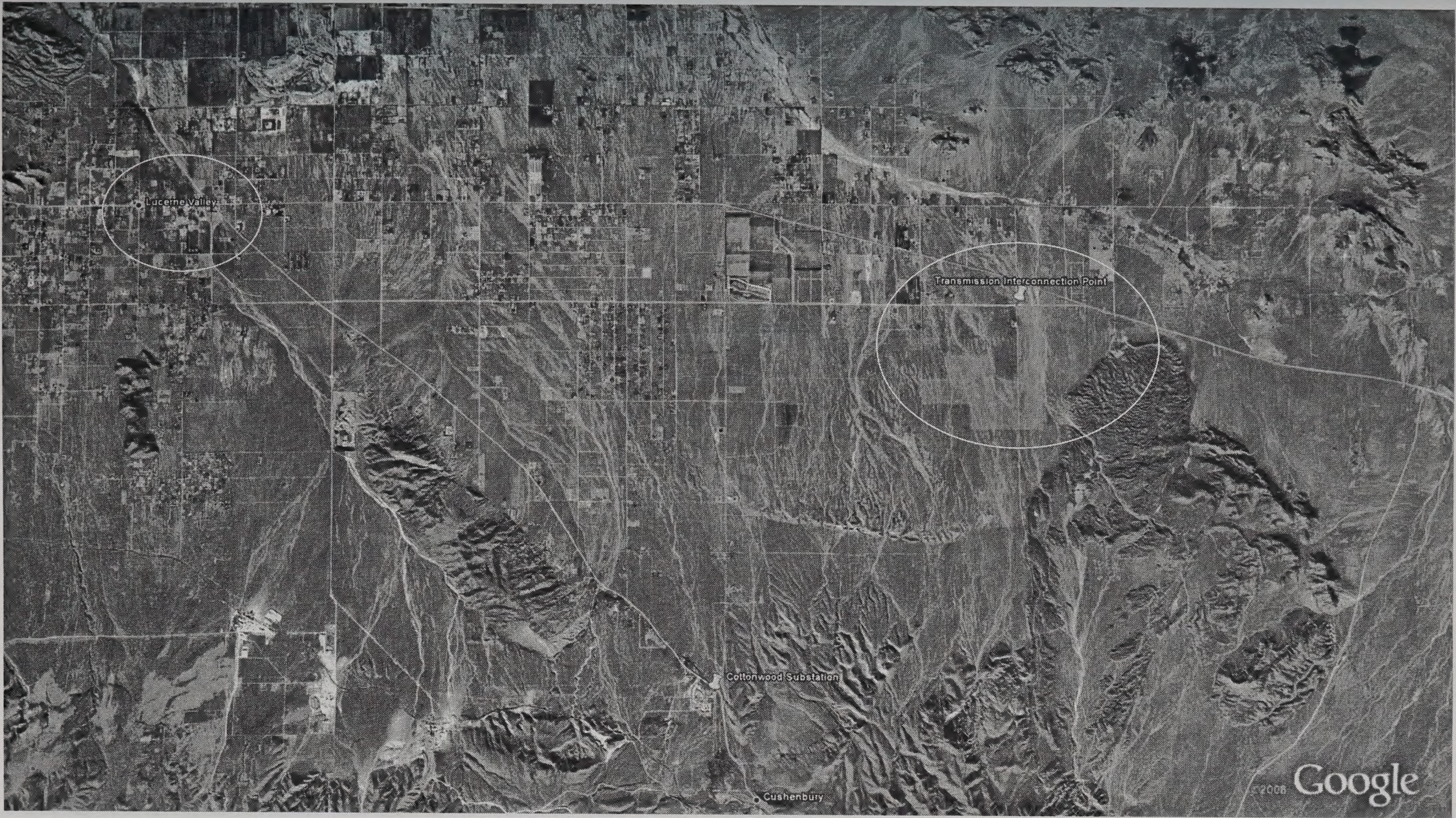
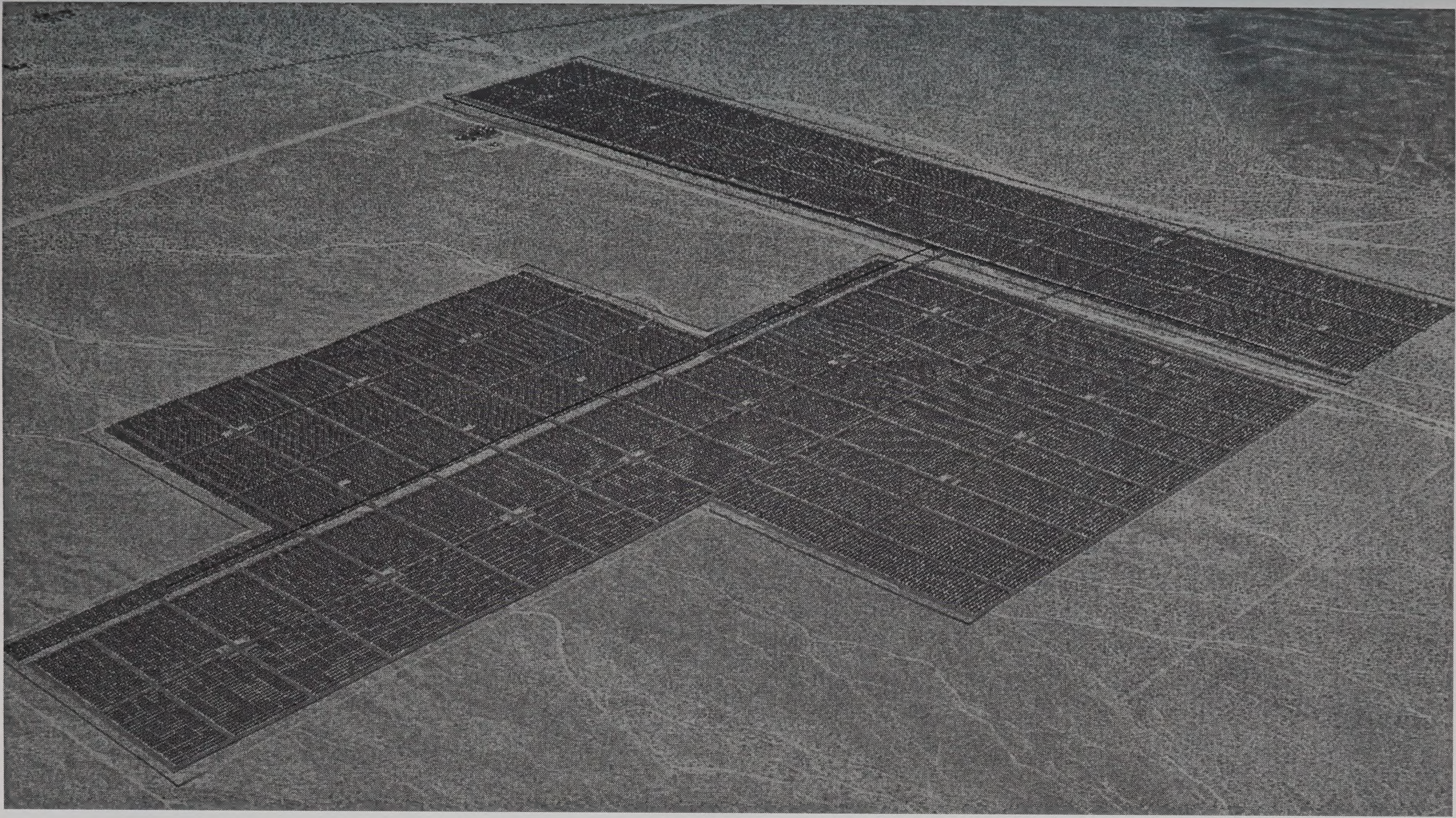


Location of proposed Lucerne Valley Solar Project

Chevron



Aerial view of proposed Lucerne Valley Solar Project (simulated)

Chevron

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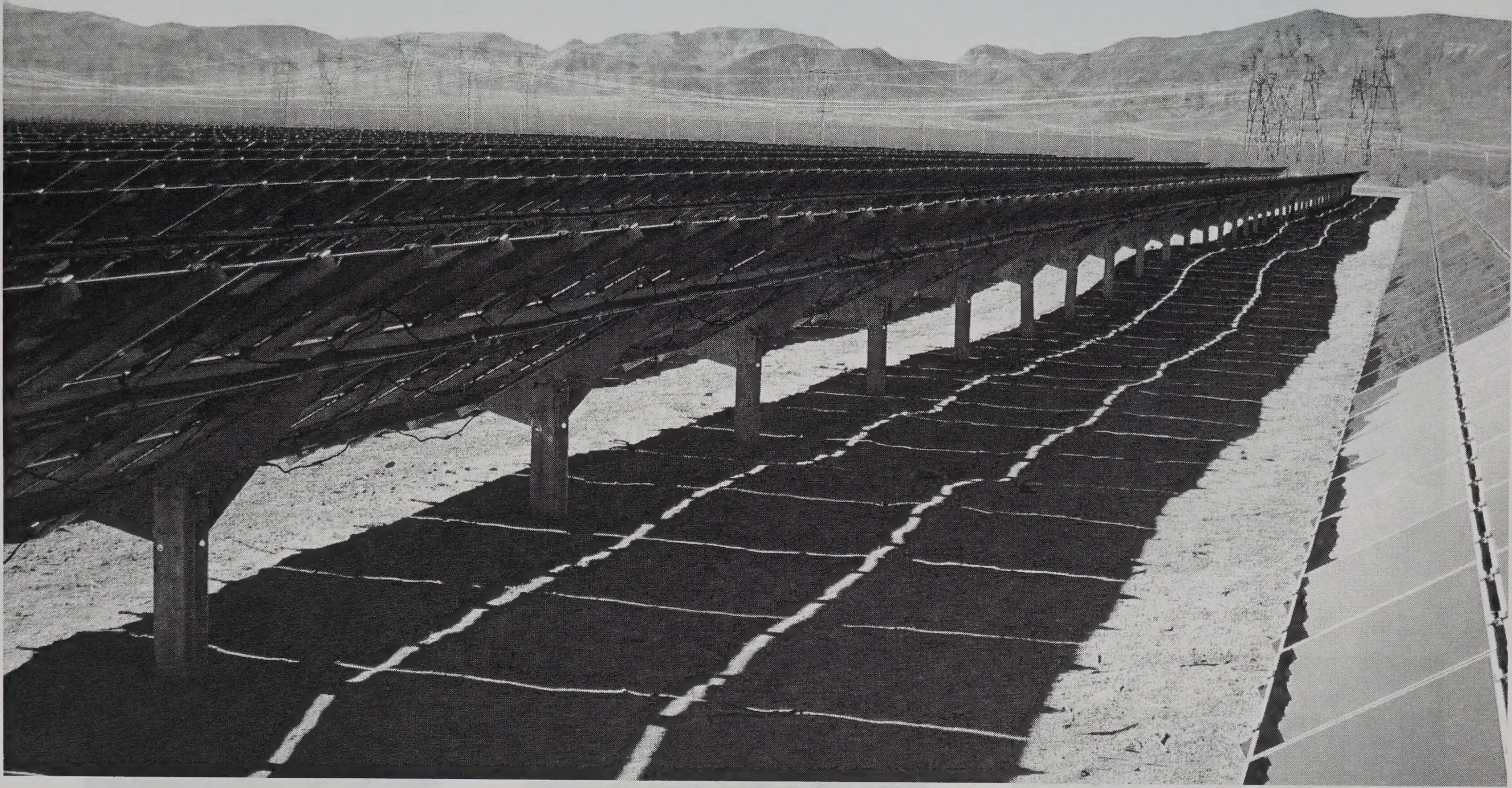

View of ground-mounted solar panel system structure

Chevron

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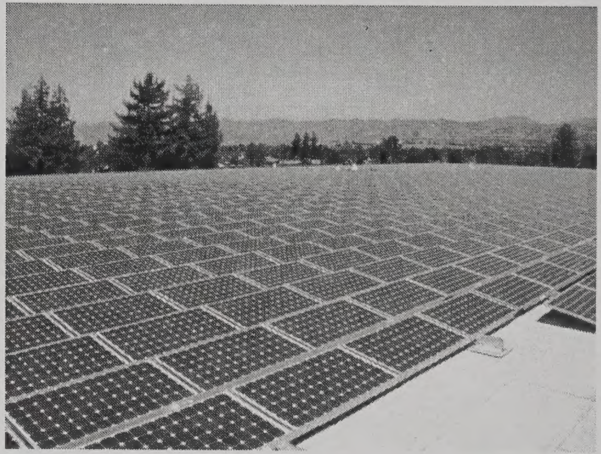
Chevron Energy Solutions

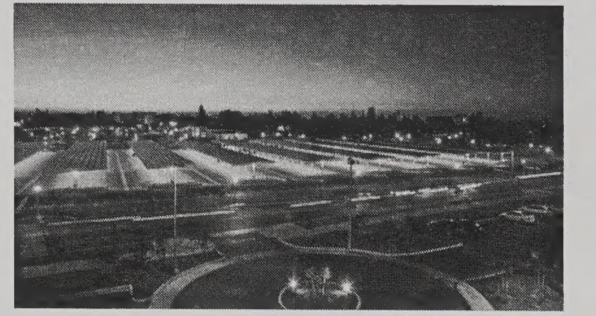
A leading sustainable energy services company providing energy efficiency, renewable power and energy reliability projects

Major clients include federal and public sector institutions and Chevron facilities

Largest installer of solar photovoltaic (PV) systems for public institutions in California with over 25 megawatts of PV power installed on more than 25 projects

Installing solar shade structures since 2003





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Appendix F
Scoping Meeting Presentation

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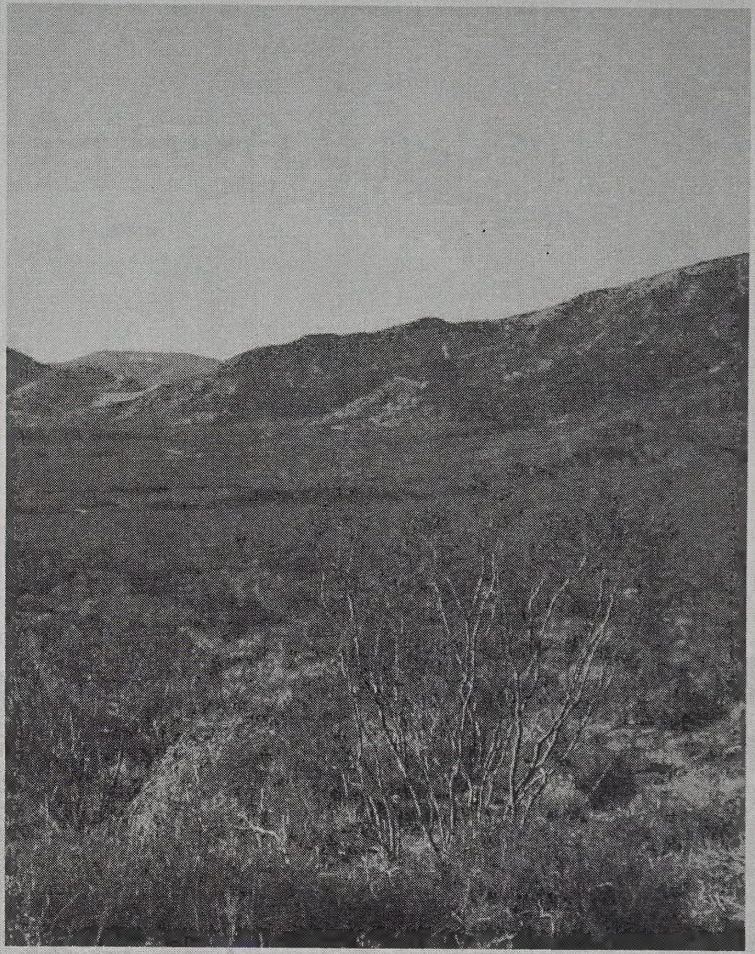
Agenda

- 6:30 – 7:00 p.m. **Open House**
- 7:00 – 7:20 p.m. **Presentation**
  - Welcome
  - Introductions
  - Project Overview
  - Meeting Purpose
  - Environmental Review Process
  - Other Opportunities for Public Comment
- 7:20 – 8:30 p.m. **Public Comment**
  - Closing Remarks



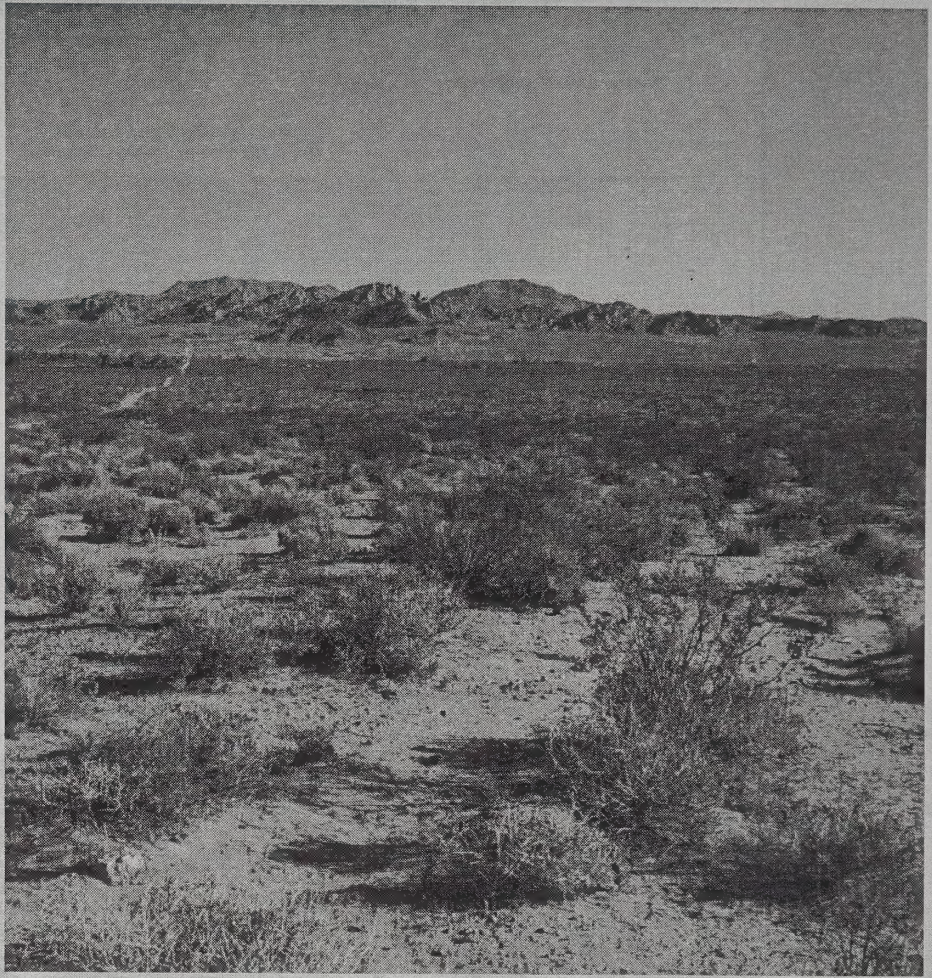
Who Are We?

- **Bureau of Land Management (BLM)**
  - **Roxie Trost,** Barstow Field Office Manager
  - **Greg Thomsen,** Program Manager, California Desert District Office
- **Chevron Energy Solutions**
  - **Ralph Hollenbacher,** Senior Manager - Technical Services, Large Scale Renewables
- **Ecology and Environment, Inc.**
  - **Dave Plumpton,** third party consultant on behalf of BLM

Project Overview

Purpose and Need

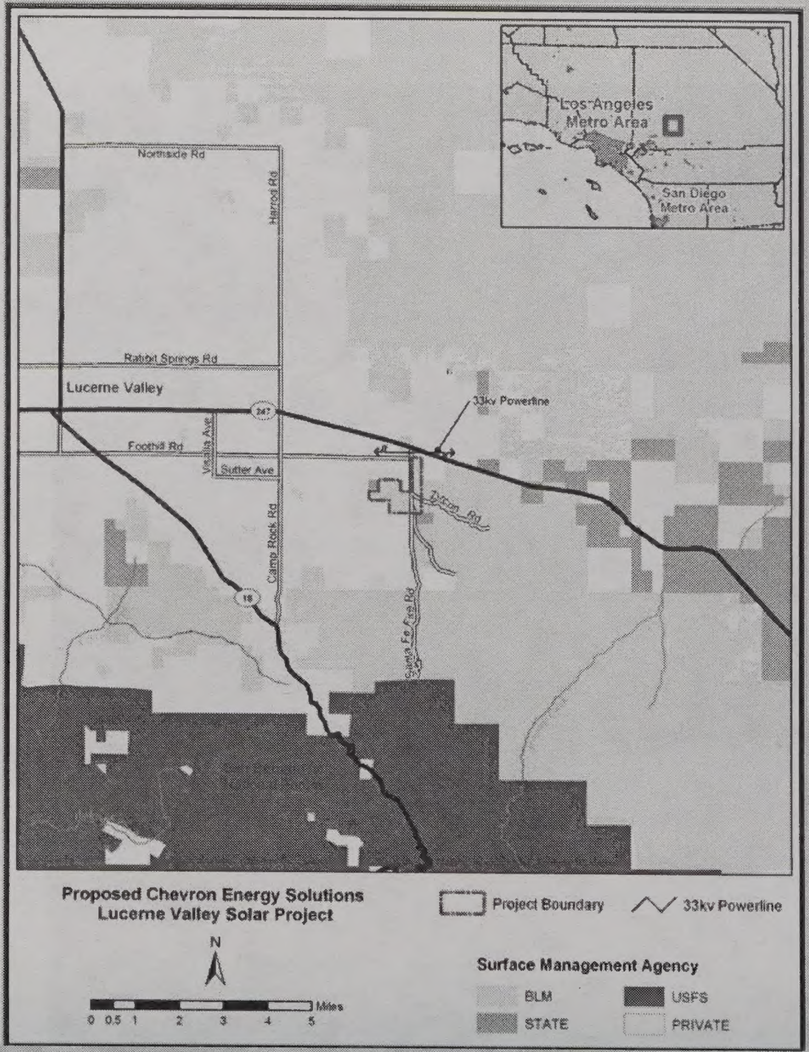
- Consider right-of-way (ROW) to construct project
- Consider California Desert Conservation Area Plan (CDCA Plan) Amendment
- Implement Energy Policy Act of 2005 and Secretarial Orders 3283
- Assist the State in meeting the Renewable Portfolio Standard



Project Overview

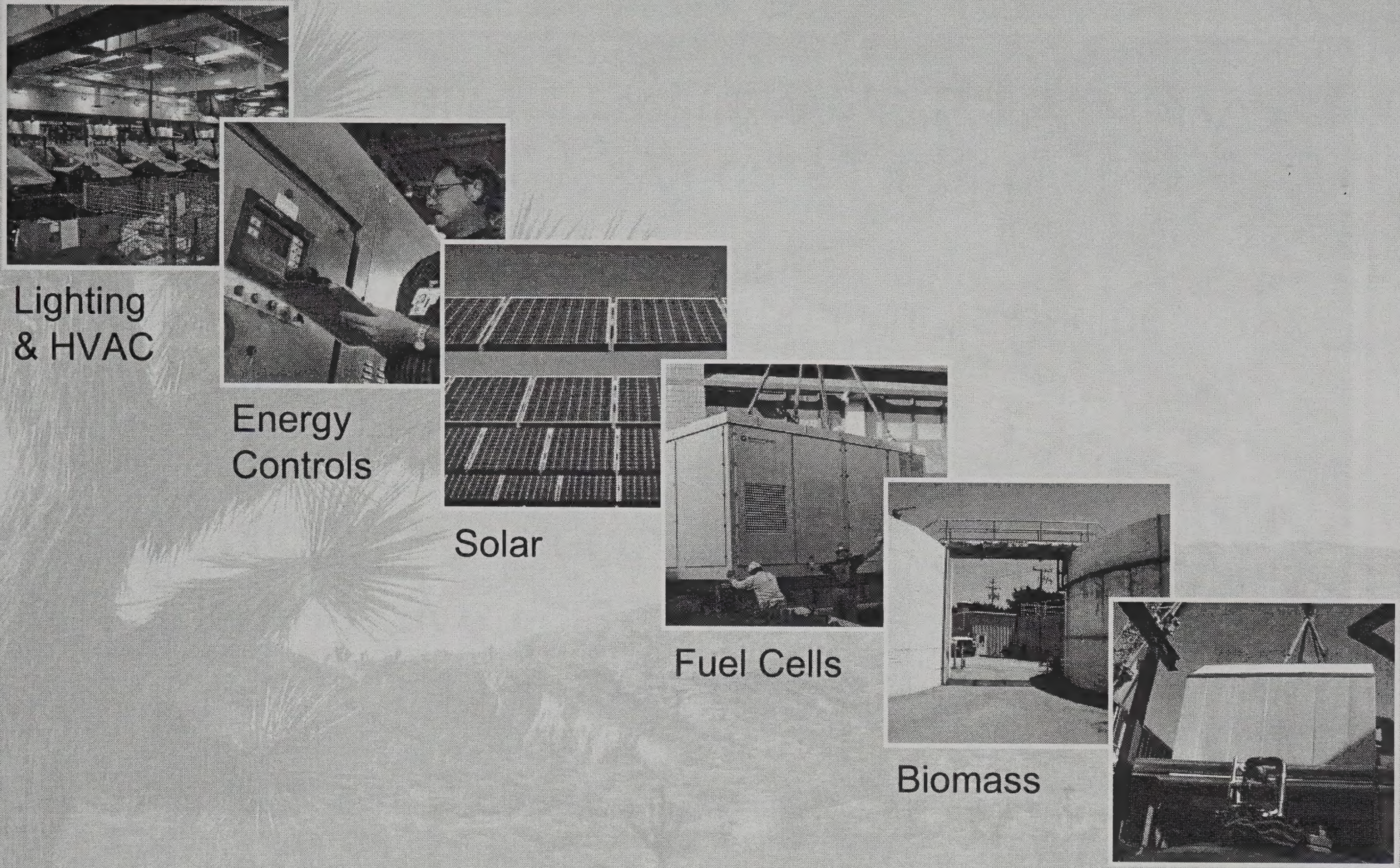
Project Location

- **516 acres, on BLM land**
- **8 miles southeast of Lucerne Valley**



Proposed Chevron Energy Solutions Lucerne Valley Solar Project

Chevron Energy Solutions: Efficiency, Reliability, Renewable Power



Lighting & HVAC

Energy Controls

Solar

Fuel Cells

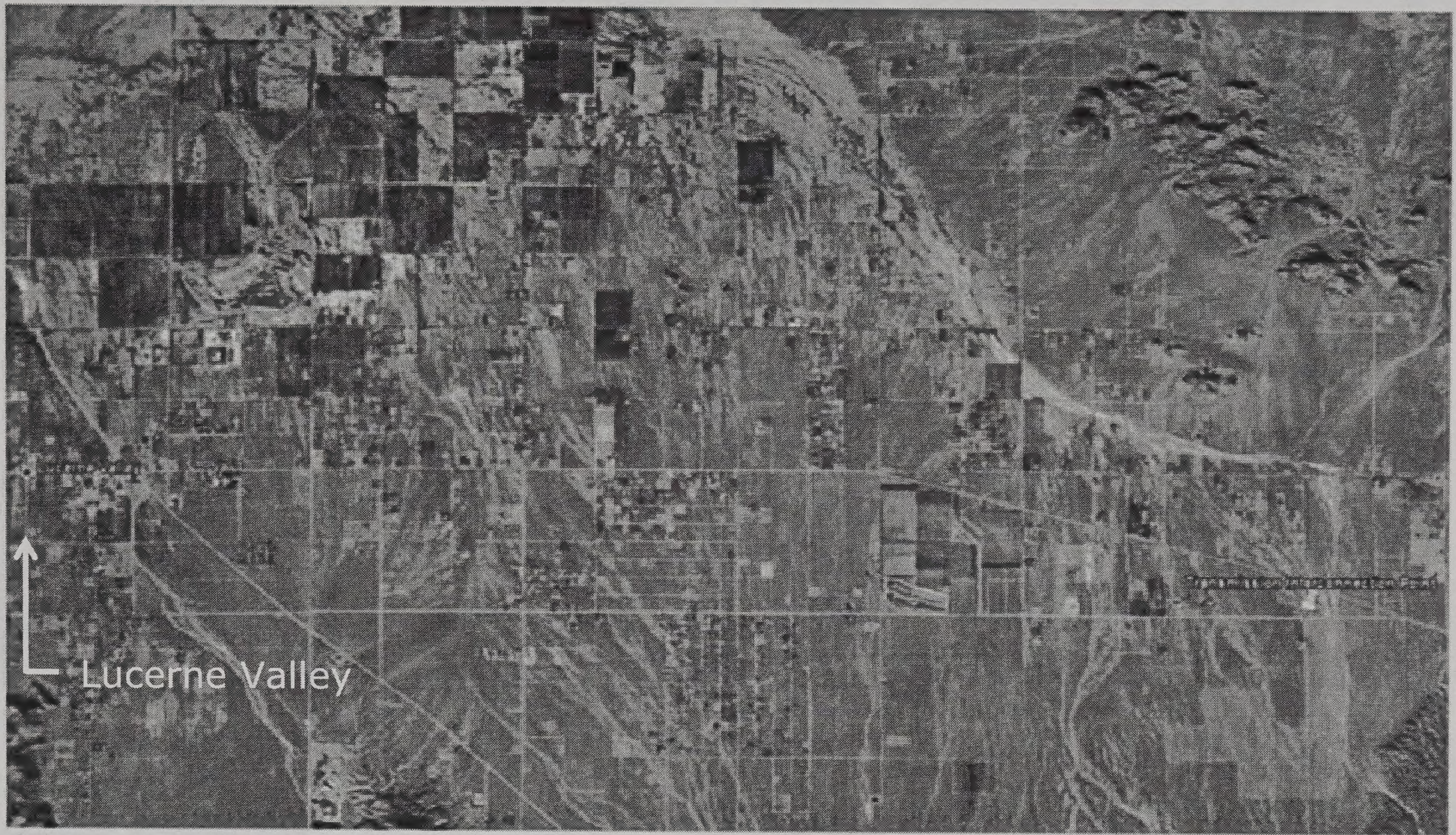
Biomass

Cogeneration

Chevron Energy Solutions (CES)

- A leading sustainable energy services company providing energy efficiency, renewable power and energy reliability projects
  - 400 professionals
  - Two dozen locations across the U.S.
  - Major clients include: Federal and Public Sector Institutions and Chevron Facilities
- Largest installer of PV systems for public institutions in California with over 25 MW of PV installed.

Location of the Lucerne Valley Solar Project



Project Statistics

- Phased, 45 MWe solar photovoltaic plant
  - 516 acres of BLM land
  - Interconnects with SCE 34.5 kV system
- 20 MWe First Phase
  - Start construction Q4 2010
  - $100 million project, $20 million local content
  - Peak construction workforce of 40 workers
  - Permanent work force of 2 workers
  - Estimated water use 10,000 gallons per year

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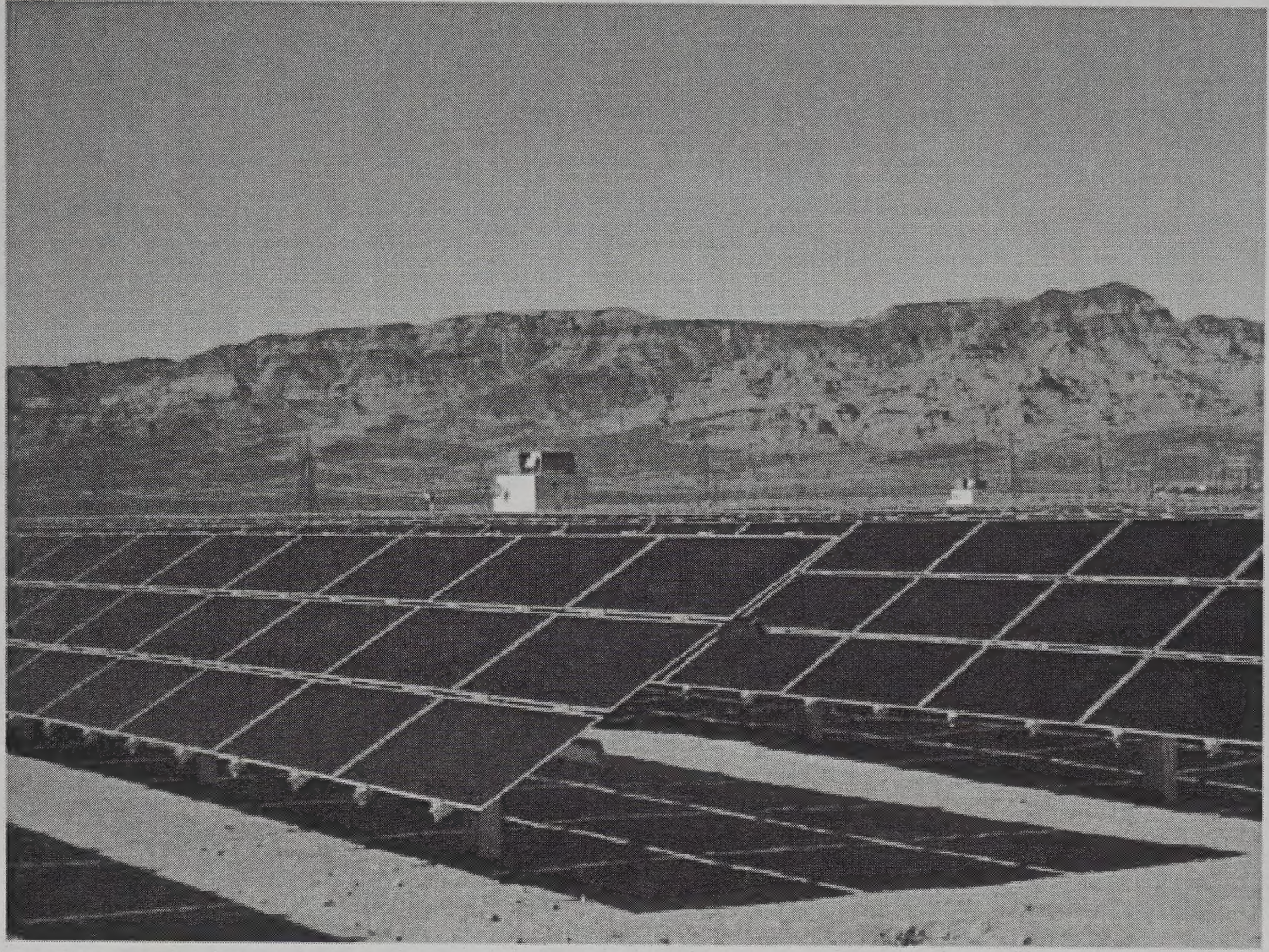
Thin film PV installation (Panels Facing South)

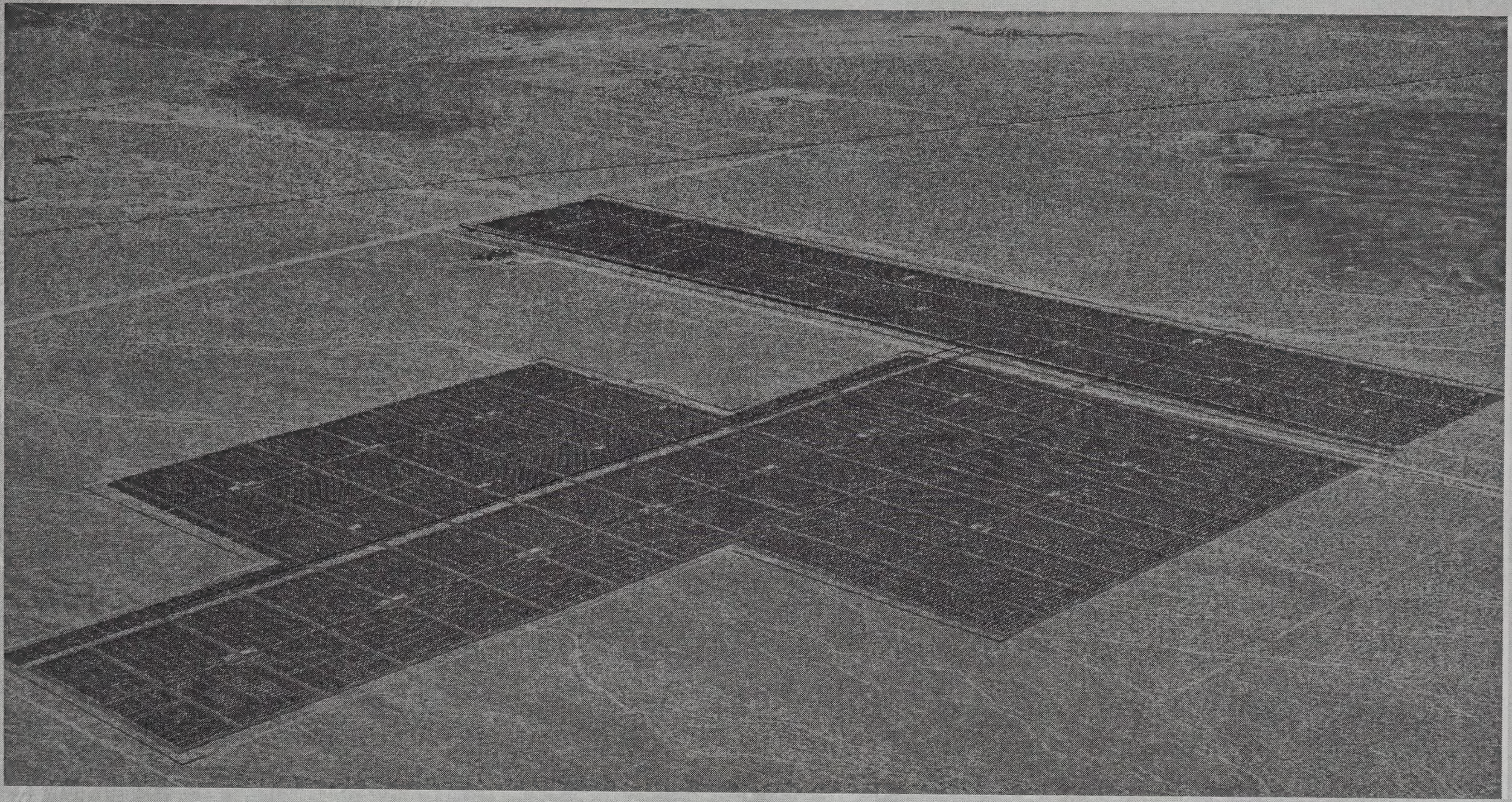


U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Another view of a thin film PV project

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Visual Simulation of the project



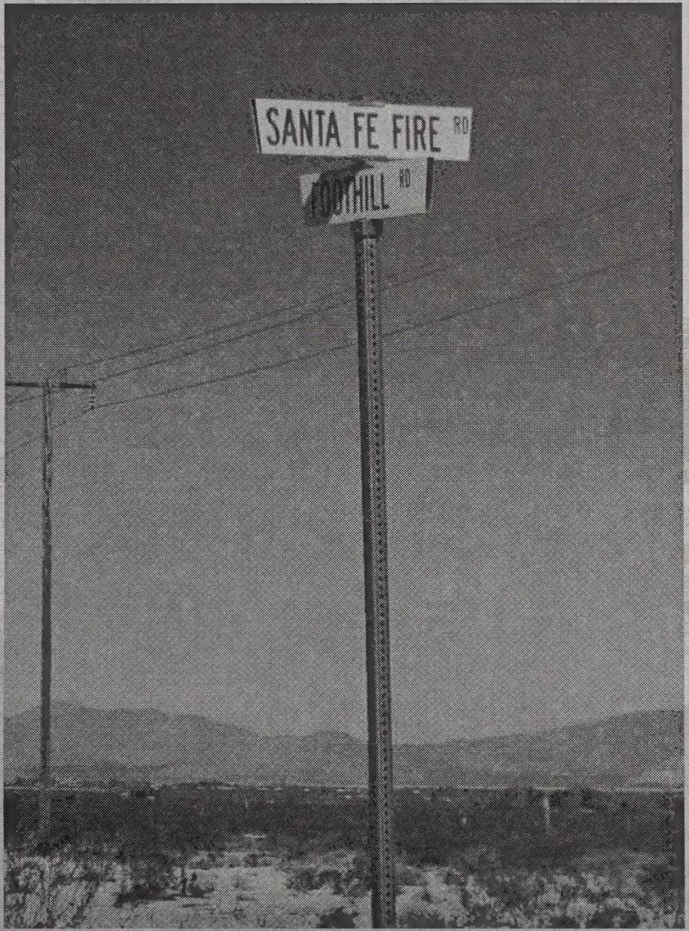
Why Are We Here?

- BLM is preparing an Environmental Impact Statement (EIS)
- Present project overview
- Allow the public to provide BLM information and identify concerns
- Use this information to develop and analyze the project
- BLM will utilize and coordinate the NEPA commenting process to satisfy the public involvement process for Section 106 of the National Historic Preservation Act (NHPA)

Environmental Review

- **The Bureau of Land Management (BLM) is the National Environmental Policy Act (NEPA) lead agency**

Preparation of the EIS



1. **Notice of Intent** (July 23, 2009)
2. **Scoping Period** (from July 23 to August 22, 2009)
3. **Draft EIS and Public Comment Period** (90 days; anticipated late 2009)
4. **Final EIS** (to be determined)
5. **Record of Decision** (60 days after final EIS)

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NEPA Objectives

- **Allow the public to provide BLM with information and identify concerns**
- **Identify reasonable alternatives for analysis**
- **Analyze environmental impacts of proposed project and alternatives**
- **Identify ways to avoid or reduce environmental impacts**
- **Provide BLM with information so a decision can be made after the EIS is complete**

General Guidelines for the Comment Session

This session is to hear from you…

- **Please:**
  - Submit speaker cards in order to speak
  - Wait until your name is called
  - State your name and speak clearly
  - Limit your comments to 3 minutes; you may ask questions after all comments have been made
  - Use comment forms for more extensive input

Where to Send Your Comments

- **Scoping comments will be accepted through**

  August 22, 2009

- **Send comments to:**

  BLM California Desert District Office
  attn: Greg Thomsen, Program Manager,
  22835 Calle San Juan de Los Lagos, Moreno Valley, CA 92553

  Submit by email to: LucerneSolar@blm.gov

Thank you!

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Appendix G
Comments Received during Scoping Period

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Audubon California * California Wilderness Coalition * Defenders of Wildlife
Desert Protective Council * Mojave Desert Land Trust
Natural Resources Defense Council * Sierra Club * The Nature Conservancy
The Wilderness Society * The Wildlands Conservancy

Renewable Siting Criteria for California Desert Conservation Area

Environmental stakeholders have been asked by land management agencies, elected officials, other decision-makers, and renewable energy proponents to provide criteria for use in identifying potential renewable energy sites in the California Desert Conservation Area (CDCA). Large parts of the California desert ecosystem have survived despite pressures from mining, grazing, ORV, real estate development and military uses over the last century. Now, utility scale renewable energy development presents the challenge of new land consumptive activities on a potentially unprecedented scale. Without careful planning, the surviving desert ecosystems may be further fragmented, degraded and lost.

The criteria below primarily address the siting of solar energy projects and would need to be further refined to address factors that are specific to the siting of wind and geothermal facilities. While the criteria listed below are not ranked, they are intended to inform planning processes and were designed to provide ecosystem level protection to the CDCA (including public, private and military lands) by giving preference to disturbed lands, steering development away from lands with high environmental values, and avoiding the deserts' undeveloped cores. They were developed with input from field scientists, land managers, and conservation professionals and fall into two categories: 1) areas to prioritize for siting and 2) high conflict areas. The criteria are intended to guide solar development to areas with comparatively low potential for conflict and controversy in an effort to help California meet its ambitious renewable energy goals in a timely manner.

Areas to Prioritize for Siting

- o Lands that have been mechanically disturbed, i.e., locations that are degraded and disturbed by mechanical disturbance:
  - Lands that have been "type-converted" from native vegetation through plowing, bulldozing or other mechanical impact often in support of agriculture or other land cover change activities (mining, clearance for development, heavy off-road vehicle use).[1]
- o Public lands of comparatively low resource value located adjacent to degraded and impacted private lands on the fringes of the CDCA:[2]
  - Allow for the expansion of renewable energy development onto private lands.
  - Private lands development offers tax benefits to local government.
- o Brownfields:
  - Revitalize idle or underutilized industrialized sites.
  - Existing transmission capacity and infrastructure are typically in place.
- o Locations adjacent to urbanized areas:[3]
  - Provide jobs for local residents often in underserved communities;
  - Minimize growth-inducing impacts;

    - Provide homes and services for the workforce that will be required at new energy facilities;
    - Minimize workforce commute and associated greenhouse gas emissions.
- o Locations that minimize the need to build new roads.
- o Locations that could be served by existing substations.
- o Areas proximate to sources of municipal wastewater for use in cleaning.
- o Locations proximate to load centers.
- o Locations adjacent to federally designated corridors with existing major transmission lines.[4]

High Conflict Areas

In an effort to flag areas that will generate significant controversy the environmental community has developed the following list of criteria for areas to avoid in siting renewable projects. These criteria are fairly broad. They are intended to minimize resource conflicts and thereby help California meet its ambitious renewable goals. The criteria are not intended to serve as a substitute for project specific review. They do not include the categories of lands within the California desert that are off limits to all development by statute or policy.[5]

- o Locations that support sensitive biological resources, including: federally designated and proposed critical habitat; significant[6] populations of federal or state threatened and endangered species,[7] significant populations of sensitive, rare and special status species,[8] and rare or unique plant communities.[9]
- o Areas of Critical Environmental Concern, Wildlife Habitat Management Areas, proposed HCP and NCCP Conservation Reserves.[10]
- o Lands purchased for conservation including those conveyed to the BLM.[11]
- o Landscape-level biological linkage areas required for the continued functioning of biological and ecological processes.[12]
- o Proposed Wilderness Areas, proposed National Monuments, and Citizens' Wilderness Inventory Areas.[13]
- o Wetlands and riparian areas, including the upland habitat and groundwater resources required to protect the integrity of seeps, springs, streams or wetlands.[14]
- o National Historic Register eligible sites and other known cultural resources.
- o Locations directly adjacent to National or State Park units.[15]

EXPLANATIONS

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[1] Some of these lands may be currently abandoned from those prior activities, allowing some natural vegetation to be sparsely re-established. However, because the desert is slow to heal, these lands do not support the high level of ecological functioning that undisturbed natural lands do.

[2] Based on currently available data.

[3] Urbanized areas include desert communities that welcome local industrial development but do not include communities that are dependent on tourism for their economic survival.

[4] The term "federally designated corridors" does not include contingent corridors.

[5] Lands where development is prohibited by statute or policy include but are not limited to: National Park Service units; designated Wilderness Areas; Wilderness Study Areas; BLM National Conservation Areas; National Recreation Areas; National Monuments; private preserves and reserves; Inventoried Roadless Areas on USFS lands; National Historic and National Scenic Trails; National Wild, Scenic and Recreational Rivers; HCP and NCCP lands precluded from development; conservation mitigation

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banks under conservation easements approved by the state Department of Fish and Game, U.S. Fish and Wildlife Service or Army Corps of Engineers a; California State Wetlands; California State Parks; Department of Fish and Game Wildlife Areas and Ecological Reserves; National Historic Register sites.

[6] Determining "significance" requires consideration of factors that include population size and characteristics, linkage, and feasibility of mitigation.

[7] Some listed species have no designated critical habitat or occupy habitat outside of designated critical habitat. Locations with significant occurrences of federal or state threatened and endangered species should be avoided even if these locations are outside of designated critical habitat or conservation areas in order to minimize take and provide connectivity between critical habitat units.

[8] Significant populations/occurrences of sensitive, rare and special status species including CNPS list 1B and list 2 plants, and federal or state agency species of concern.

[9] Rare plant communities/assemblages include those defined by the California Native Plant Society's Rare Plant Communities Initiative and by federal, state and county agencies.

[10] ACECs include Desert Tortoise Desert Wildlife Management Areas (DWMAs). The CDCA Plan has designated specific Wildlife Habitat Management Areas (HMAs) to conserve habitat for species such as the Mohave ground squirrel and bighorn sheep. Some of these designated areas are subject to development caps which apply to renewable energy projects (as well as other activities).

[11] These lands include compensation lands purchased for mitigation by other parties and transferred to the BLM and compensation lands purchased directly by the BLM.

[12] Landscape-level linkages provide connectivity between species populations, wildlife movement corridors, ecological process corridors (e.g., sand movement corridors), and climate change adaptation corridors. They also provide connections between protected ecological reserves such as National Park units and Wilderness Areas. The long-term viability of existing populations within such reserves may be dependent upon habitat, populations or processes that extend outside of their boundaries. While it is possible to describe current wildlife movement corridors, the problem of forecasting the future locations of such corridors is confounded by the lack of certainty inherent in global climate change. Hence the need to maintain broad, landscape-level connections. To maintain ecological functions and natural history values inherent in parks, wilderness and other biological reserves, trans-boundary ecological processes must be identified and protected. Specific and cumulative impacts that may threaten vital corridors and trans-boundary processes should be avoided.

[13] Proposed Wilderness Areas: lands proposed by a member of Congress to be set aside to preserve wilderness values. The proposal must be: 1) introduced as legislation, or 2) announced by a member of Congress with publicly available maps. Proposed National Monuments: areas proposed by the President or a member of Congress to protect objects of historic or scientific interest. The proposal must be: 1) introduced as legislation or 2) announced by a member of Congress with publicly available maps. Citizens' Wilderness Inventory Areas: lands that have been inventoried by citizens groups, conservationists, and agencies and found to have defined "wilderness characteristics." The proposal has been publicly announced.

[14] The extent of upland habitat that needs to be protected is sensitive to site-specific resources. For example: the NECO Amendment to the CDCA Plan protects streams within a 5-mile radius of Townsend big-eared bat maternity roosts; aquatic and riparian species may be highly sensitive to changes in groundwater levels.

[15] Adjacent: lying contiguous, adjoining or within 2 miles of park or state boundaries. (Note: lands more than 2 miles from a park boundary should be evaluated for importance from a landscape-level linkage perspective, as further defined in footnote 12).

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"Meg Grossglass" <meg@orba.biz>

07/15/2009 06:32 PM

To <LucerneSolar@blm.gov>

cc

Subject Map - Lucerne Valley Solar Project

Hello,

Can you please send me a map of the project area?

Thank you!

Meg Grossglass
Media Relations and Land Use

ORBA - the Off-Road Business Association
951-926-1953 - office
951-415-1869 - Cell
661-323-1464 - Corporate Office

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July 15, 2009

Email Title: Public Comment

I sincerely hope and pray that any licenses granted for solar electric projects contain iron-clad rules for site maintenance during the useful life of the project and site remediation and clean-up when the project reaches the end of its useful life.

I would hate to think that we have made mistakes that we have done and are still doing with mining facilities.Leaving a desert site filled with abandoned junk should be unthinkable. Lets not let the rush for renewable energy be the cause of destruction of our natural beauty

Edward Wood
frd750@gmail.com
12 S Bailey Loop Drive
Goldendale
WA 98620

July 16, 2009

Is there a map available on the location of the PV project? The BLM site links do not work well.

Dennis Morrison
Assistant Production Supervisor
Heavy Wheel Shop
Northrop Grumman
Fort Irwin, CA.
760-380-5432
dennis.w.morrison@us.army.mil

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July 16, 2009

Can you provide maps that delineation the boundaries of the project and the list of legal descriptions for the parcels included in it?

Jim Porter
Public Land Management Specialist
California State Lands Commission
100 Howe Ave., Suite 100-South
Sacramento, CA 95825
Tel: (916) 574-1865
Fax: (916) 574-1925

July 17, 2009

Email Title: Cleaning Solar Panels?

Fox News did an investigation into the cost of upkeep and maintenance of the Solar Collection Panels that are used to collected the Suns Solar Energy.

In their report they stated that these Panels need to be Cleaned on a regular bases in order to operate effectively and that cleaning them Requires a Large Amounts of Water !

The High Desert is in a very bad drought. We can't afford to use Our scarce water to clean Your Solar Panels. There is an abundant of Wind flowing across the same area You want to install Your Solar Panels in. Why not install the "Wind Mill" type power converters ?

Steven Beavers
Barstow, Ca.
255-3814

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July 17, 2009

Hello BLMers,

Would you pls send a copy of the map for the proposed Lucerne Valley Solar Project in San Bernardino County?

I understand that Chevron Energy Solutions has applied to the BLM for a right-of-way (ROW) on public lands to construct the solar photovoltaic power plant on approximately 516 acres about eight miles east of the community of Lucerne Valley.

Thanks very much.

Regards,
Joe Ross

Joseph V. Ross
MAGTFTC, MCAGCC G-4
Bldg. 1554 (HQ), Room 130
P.O. Box 788104
Twentynine Palms, CA. 92278-8104
Comm:760.830.7683 DSN:230.7683 Fax:760.830.5939
Email: joseph.ross@usmc.mil

July 20, 2009

To whom it may concern,

I work for a Substation packager (Power Substations, Inc.) and am interested in being added to the bidders list for the Lucerne Valley Solar Project. We have the means to provide our own contracting as well as work with any approved contractors you may already have in place. I understand that this project is in its early stages, but would like to request that we be added to the approved list and/or be sent the plans and specs as they become available. I greatly appreciate any assistance on this matter.

Sincerely,

Jordan T. Demmien
Project Manager/Designer
Power Substations, Inc.
8834 Mayfield Rd. Suite C
Chesterland, Ohio 44026
Phone: (440) 729-8300 x-109
Fax: (440) 729-8400
www.trivisinc.com
www.powersubs.com

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July 21, 2009

I would like to offer up my companies services for bidding on the Lucerne Valley Solar Project.

Please contact me regarding the bidding process and how HelioPower can be involved.

Please check out our website for some of our recent commercial size installations. www.heliopower.com

thank you,

Matt McPherson
Energy Consultant
Office: 760-272-0131
Cell: 310-938-0949
Fax: 951-677-9559
http://www.heliopower.com

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July 22, 2009

Can you send me a map of the proposed solar project site? I want to attend a scoping meeting, but I need to know where, exactly, "eight miles east of the town of Lucerne Valley" this thing is to be built.

Thanks,
Gary Hatfield

July 22, 2009

Hello,

My name is Dale Marriott and I am the President of Fencecorp Inc. We are a fence company specializing in commercial fencing. We have fenced several solar plants and would definitely be interested in providing fencing for this project. Can you please provide me with any information available as far as contacts so that I might be able to get in touch with the appropriate people.

Thank You,

FenceCorp Inc.
882 main street
Riverside, Ca 92501

Dale Marriott
Ph# 951-686-3170
Fax# 951-788-7759
Cell# 951-830-6200
Email: d.marriott@fencecorp.us
Web: www.fencecorp.us

"Pugliese, Jim (JAPU)" <japu@chevron.com>

07/23/2009 09:00 AM

To <LucerneSolar@blm.gov>

cc

Subject distribution list for CES proposed project in Lucerne valley

Kindly include me in your email distribution list for Chevron Energy Solutions proposed project in Lucerne Valley

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July 25, 2009

Email Title: Scoping Comments on Proposed 45 MW Lucerne Solar Project

To whom it may concern:

My name is Brendan Hughes and I would like to comment on the proposed 45 MW Lucerne Solar Project. This thin-film photovoltaic project would require more than 500 acres of land that would be completely graded and recontoured. I believe that it is unnecessary for this project to be located on undeveloped BLM land. The Lucerne Valley area has thousands of acres of abandoned farmland that are already disturbed and degraded. Chevron should use some of this private land to build its project. Much of this abandoned farmland is already serviced by utility lines. Also, Chevron should consider installing these 45 MW of solar panels onto the rooftops of homes and businesses in the greater Victorville area. Both of these options would fit the ultimate purpose and need of the project. The need is for renewable power for the uses of people. The purpose of the project is to provide that power. Therefore both of these options should be presented and considered as reasonable alternatives to the proposed action. Indeed, BLM should determine one of these to be the preferred alternative to the action.

Aside from the issues above, the Draft EIS should consider impacts to wildlife, including the desert tortoise, along with the impacts to the scenic visual landscape between Lucerne Valley and Yucca Valley, including the Johnson Valley OHV area. Also, the greenhouse gases produced by building a solar project at a remote site, as opposed to rooftop solar or closer to population centers, should be considered in the analysis of the project.

Thank you for your consideration.

Brendan Hughes
61093 Prescott Trail
Joshua Tree, CA 92252
jesusthedude@hotmail.com

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July 26, 2009

Please reply. I need a map of the site location. Or, please tell me where to find one. I need this information before the scoping meeting.

Thanks,
Gary Hatfield

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July 27, 2009

Fidelity Investments International
Oakhill house,130 Tonbridge,
Hildenborough.
Kent TN119DZ,
United Kingdom.
I know that this might come to you as a suprise as we do not know each other before. I am Mr Tim McCarron, the fund manager of Fidelity Investments International, UK. I will need your assistance in investing some money in your country. If you are interested and you want to partner with me, kindly get back to me for more details.Reply to me via email.

Sincerely Yours.
Tim McCarron
Fund Manager,
Fidelity Investments International,
London, UK.

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July 28, 2009

Lynnette,

I would like to officially request that I be put on the public notification list for this project. I understand that a press release went out stating that the July 29 scoping meeting has been re-located. Is the meeting on the 30th still in the same location?

Thanks

Meg Grossglass
Media Relations and Land Use

ORBA - the Off-Road Business Association
951-926-1953 - office
951-415-1869 - Cell
661-323-1464 - Corporate Office

Gary Hatfield <mtnhomehat@yahoo.com>
07/28/2009 01:58 PM
To Lucernesolar@blm.gov
cc
Subject

sorry, I got the map
Thanks, Gary

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Gary Hatfield <mtnhomehat@yahoo.com>
07/28/2009 01:46 PM
To Lucernesolar@blm.gov
cc
Subject Map download

Map not downloading, . . . or it takes forever. I have super-fast FIOS. Shouldn't take this long (15 min already).
Please advise.
Gary

Bureau of Land Management

Public Scoping Meeting

Lucerne Valley Solar Project EIS

Lucerne Valley, CA

July 29, 2009

RECEIVED
BUREAU OF LAND MGMT
09 AUG 21 PM 12:26
CALIF. DESERT DISTRICT
MORENO VALLEY, CA

Note: Before including your address, telephone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment, including your personal identifying information, may be made publicly available at any time. While you may ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. All submissions from individuals identifying themselves as representatives or officials of organizations or businesses will be made available for public inspection in their entirety

COMMENTS

Thank you for participating in tonight's Public Scoping Meeting on the Lucerne Valley Solar Project EIS

Your comments on the scope and focus of the environmental review are encouraged.

Name (please print legibly): CHARLENE CLAYbaugh

Affiliation (if applicable): Johnson VAlley Improvement Association

Phone:

Email: Charlene@TheClaybaughgroup.net

Mailing Address: 51720 Hacienda Rd#45

City, State, Zip: Johnson VAlley CA 92285

COMMENTS:
What issues should be addressed in this environmental document?

The impact of water, Construction, Maintenance, Visual impact, TRAFFIC, Real ESTATE VAlues,

Alternative. Solar power/wind power installed on our Homes.

Before Aug 22, 2009 ~~Turn in Comments during this meeting or~~

Send comments to: BLM California Desert District Office, attn: Greg Thomsen, Program Manager, 22835 Calle San Juan de Los Lagos, Moreno Valley, CA 92553 or by e-mail at LucerneSolar@blm.gov

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Bureau of Land Management
Public Scoping Meeting
Lucerne Valley Solar Project EIS
Lucerne Valley, CA
July 29, 2009

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COMMENTS

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Your comments on the scope and focus of the environmental review are encouraged.

Name (please print legibly): Juanita Crouse
Affiliation (if applicable):
Phone: 760-364-4281 Email:
Mailing Address: 48378 Firethorn
City, State, Zip: Johnson Valley, CA. 92285

COMMENTS:
What issues should be addressed in this environmental document?

devalue property

Eye sore

No end to putting up "many" –

Before Aug 22, 2009 ~~Turn in Comments during this meeting or~~
Send comments to: BLM California Desert District Office, attn: Greg Thomsen, Program Manager, 22835 Calle San Juan de Los Lagos, Moreno Valley, CA 92553 or by e-mail at LucerneSolar@blm.gov

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COMMENTS

Thank you for participating in tonight's Public Scoping Meeting on the Lucerne Valley Solar Project EIS
Your comments on the scope and focus of the environmental review are encouraged.

Name (please print legibly): M Diane Hunnicutt
Affiliation (if applicable):
Phone: 760 364-2535 Email:
Mailing Address: 4776 Greene Road
City, State, Zip: Johnson Valley, Ca 92285

COMMENTS:
What issues should be addressed in this environmental document?

eye sore
uses to much water
Property values will go down
lost desert for desert toys we have lots of roads we have used for 50 years why take it away from us.

Notice all cactus's from wind farm in Palm Springs area ~~of~~ have been removed.

Before Aug 22, 2009 ~~Turn in Comments during this meeting or~~
Send comments to: BLM California Desert District Office, attn: Greg Thomsen, Program Manager, 22835 Calle San Juan de Los Lagos, Moreno Valley, CA 92553 or by e-mail at LucerneSolar@blm.gov

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COMMENTS

Thank you for participating in tonight's Public Scoping Meeting on the Lucerne Valley Solar Project EIS

Your comments on the scope and focus of the environmental review are encouraged.

Name (please print legibly): Dawn Tonioli

Affiliation (if applicable):

Phone: 760 364-4587 Email:

Mailing Address: Po Box 3896

City, State, Zip: Landers - Calif 92285

COMMENTS:
What issues should be addressed in this environmental document?

devaluation of property values

additional use of water for maintenance

Before Aug 22, 2009 ~~Turn in Comments during this meeting or~~

Send comments to: BLM California Desert District Office, attn: Greg Thomsen, Program Manager, 22835 Calle San Juan de Los Lagos, Moreno Valley, CA 92553 or by e-mail at LucerneSolar@blm.gov

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August 1, 2009

```
name = Ramona Doles

organization = Homeowners of Newberry Springs

email = mommom97@yahoo.com

subject = plan for solar plant in the middle of homes

FeedbackType = General Question

request_comment = We are gathering information to fight this plan and
one of our questions is regarding the round tail squirel is on the
endangered species list.
<br>
<br>We would like to know if you require an environmental study on this
type of plan?

username123 =

sentinal = Sentinal

page_referred_from = http://www.blm.gov/ca/st/en/fo/barstow.html
fo = 4

Submit = Send Request
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August 1, 2009
Email Title: Project

I attended the presentation at Lucerne Valley in late July. There seemed to be a few people (not of the community) who had concerns about aspects of the project. I found some to be laughable. For example, one person brought up earthquake seizmic reports. For goodness sakes, the solar panels are only 6 feet high. If they should fall over in an earthquake no one would be hurt, the only damage would be to the cells themselves.

Another was concerned about road grading, and or paving. The county currently grades our roads around once every 6 weeks. I'm sure he would complain if the county didn't grade his road.

There was mentioned a concern about wild mountain sheep. I have lived here continuously for the last 28 years and have never seen a sheep. Besides the project is not in the mountains.

We have been way to long depending on foreign oil for our energy. It is time to utilize all alternative energy, solar, wind, bio diesel, and anything else that comes along

I support the project 100 percent.

Larry Mayer

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LUCERNE VALLEY ECONOMIC DEVELOPMENT ASSOCIATION (LVEDA)

To: Greg Thomsen – BLM (LucerneSolar@BLM.gov)
Ralph Hollenbacher – Chevron (Rhollenbacher@chevron.com)

Re: Scoping - Chevron Energy Solutions – Lucerne Valley Solar Project.

From: Chuck Bell, Sec.
P. O. Box 193
Lucerne Valley, CA 92356 760 964 3118

Date: 8/3/09

LVEDA's Mission Statement:
Provide a forum for discussion and action on important community issues – promote infrastructure improvements – work with County and developers to promote development that is both "economic" and compatible with our rural lifestyle, environment and resource availability.

Appreciate the scoping session - hopefully productive for BLM and Chevron. Although this PV project is a relatively small "utility scale" proposal – and adjacent to a transmission line that can apparently accommodate the voltage - we will not take a position until the environmental process is complete.

GENERAL COMMENTS:

In order not to get the "cart before the horse" - this project should be assessed via BLM's Programmatic process which will identify the limited areas available and suitable for solar plants - quantifying the amount of acreage/sq. miles and alignments dedicated to all the land-uses that we already provide s. Calif. - to fully understand why we need a "Solar Energy Siting Element" to our current BLM and County Plans

Lucerne Valley could well be surrounded by the following projects: LADWP's GPN transmission line – Granite Mt. Wind – Fry Mt. Wind – the proposed Cannon Solar PV – SCE's solar PV – Chevron's project - etc. etc.

Granted, we have wind and sun which should be shared with our countrymen. But we also have the Mojave Desert which is a treasure unto itself - which cannot be consumed for the benefit of the urban coastal basin. Lucerne Valley provides that megalopolis with limestone, cement, aggregate (with its incessant truck traffic and no sales tax revenue for us since these raw materials are "wholesale" – providing sales tax only for other jurisdictions when converted to final products), recreation (particularly the resource-consumptive and largest OHV open areas in the nation), power line/pipeline corridors, tremendous amounts of acreage designated for expanding military bases, public open space, immense areas set-aside for habitat protection, etc. etc.

As alternatives to large-scale renewable facilities on public land, this project's analysis should include a quantitative assessment of the megawatts of solar power that could potentially be generated within the urban areas of demand (ie: roof top and parking lot systems) prior to any further commitment of public land resources to subsidize urban areas.

Use of BLM land should not displace private sector opportunities – with the cheaper use of gov. land competing w/solar plant options on private land (ie: tremendous amounts of fallowed agricultural and disturbed parcels in s. Cal. counties that cannot otherwise be developed due to water and other restrictions) - allowing landowners to make the best use of their properties – in turn providing local jurisdictions with more property tax revenue.

We also have to deal with the dilemma; "where and how do we mitigate the impacts of all these proposed projects?"

Utilities, PUC and the renewable industry need to devise means to reward communities that will bear the burden of all these solar/wind plants – and in turn provide incentives for acceptance (ie reduced elec. rates, etc). Minimal local employment, minor amounts of property taxes and the occasional donation to some community organization do not provide adequate compensation. Even a program ensuring the County receives any sales tax revenue does not substantially benefit the affected community.

SPECIFIC COMMENTS

The EIS needs to assess and mitigate the following:

If even two of these proposed projects start construction at the same time – related traffic through town will become a major impact that must be mitigated.

De-brushing/grading will create a long-term dust source, adversely affecting the facility and down-wind receptors. Minimal grading, vegetation mowing and placement of decomposed granite or small gravel will help to stabilize the site and reduce weed infestations – as well as enhancing native re-vegetation if and when facilities are removed.

Santa Fe Fire Rd. should be paved or at least graveled – benefit to local residents and eliminating a dust source.

A right-turn lane on Hwy 247 would provide safer egress in this area of high-speed traffic – especially for the construction phase.

Project's effect on surrounding private land values.

Include the total project's phases in the analysis – not just Phase 1.

The cost/benefit of power produced vs. from all other sources.

The existing transmission line's available capacity – ultimate requirement for upgrading.

Net transmission loss through said line.

Impact on Mojave Water Agency's Morongo Pipeline.

Effect on a possible future "historic/scenic" designation for Hwy 247 (Old Woman Springs Rd.)

Bonding requirements for site reclamation/restoration.

Cumulative impacts (environmental, socio-economic, traffic, visual, etc.) from this and all other proposed projects proposed for the Lucerne Valley/Johnson Valley region – (ie: LADWP's GPN transmission line, Granite Mt. Wind, Fry Mt. Wind, Edison Solar, Cannon Solar, 29 Palms Marine Base expansion, etc.).

August 3, 2009

TO: BLM California Desert District Office
Attn: Greg Thomsen, Program Manager

FROM: Dennis Pond
P.O. Box 1628
Lucerne Valley, CA 92356
Email at: dennispond@gmail.com

The proposed Lucerne Valley Solar Project is probably the best possible system to produce electricity with the least intrusion into the lives of local residents. I have the following questions and concerns about the Lucerne Valley Solar Project proposed by Chevron:

1. What will be done to mitigate the effects of blowing dust and sand when the project site has been disturbed?
2. What protections will be provided against flash-flooding? Thunderstorms are frequent enough in the mountains to the south as well as in the project area itself to assume this will be an issue during the life of the project.
3. How big an issue is geologic stability? The epicenter for the Landers Earthquake is only about 30 miles east of the site.
4. The proposed project is anticipating use of 10,000 gallons of water annually. This doesn't seem realistic to local residents. Where will the water come from?
5. Those of us who have built on private property have had to consider wildlife habitat in our construction. What will be done to protect the desert tortoise, big horn sheep, cougars, desert fox and coyotes? Because the project site is BLM land, and the federal government has a vested interest in its construction, will these concerns be considered, or swept under some rug?
6. There are rumors of multiple energy-producing projects in this area, sponsored and constructed by various private and government agencies. There doesn't seem to be a great deal of concern for the cumulative effects these projects are apt to have on the quality of life for residents living in Lucerne Valley now. Unsightly wind turbines on every ridge, and transmission lines crisscrossing the valley at multiple angles are not aesthetic additions to the natural scenery.
7. Will there be any economic benefit for the residents of Lucerne Valley? Will there be employment opportunities?

The suspicion among residents is that the Department of Energy, through the Bureau of Land Management, is ramming this and other projects slated for Lucerne Valley down our throats. It might be a little more tolerable if there were also new oil drilling rigs going up in the Santa Barbara Channel. To listen to some folks, that channel is sacred territory. To those folks and others, the Mojave Desert is so many million square miles of kitty litter, to be used and abused at the whim of politicians at the federal and state levels of government. Do you get the idea some local residents don't trust the system? If so, good!

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August 3, 2009

Please add me to the Project Mailing List. When available, please send me an electronic copy of the Draft EIS. Thanks.

Sandra Fairchild
Senior Project Manager

EPG, Inc.
2950 Sunridge Heights Parkway, Ste. 130
Henderson, Nevada 89052

(702) 263-6553 Office
(702) 263-3234 Fax
(602) 810-2765 Mobile
http:/www.epgaz.com

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August 3, 2009
Email Title: Chevron Energy Solutions
From: Claudia Sall

greg

i attended the scoping meeting for the chevron energy solution's project in lucerne valley last week. i would like to continue following this project as well as others in the johnson valley. i was disappointed that the agenda did not include a spot for q&a sesssion. questions were relegated to being casually posed before and after the presentation, and hence did not make it into the record. perhaps a spot should be included before the comment period which would make the comment period more effective. maybe in the past the q&a session has not had a spot on the agenda, but the recent planning and scoping meetings i have attended have not included question and answers on the record.

i have some questions about the chevron that i need answered:

- what is the nature of the cdca amendment?
- what is the present load on the 33kv line?
- since the combined phases will need 45,000 kv of transmission capacity, how will that upgrade be addressed. i heard a lot of probables, but as these projects are not planned in a vacuum, there must be a plan of how this will be accomplished, i.e. if there is a request into sce for upgrading this line, does that mean just re-stringing?
- does the ROW application include transmission upgrade?
- how is the water being provided? does the row include well-drilling? if so, will these wells be metered?

are these projects being processed out of moreno valley rather than barstow? please advise me who are the project managers and what are their email addresses?

there are two applications for wind projects in the pioneertown area, CACA 48629 & CACA 48689. i am interested in knowing what is happening with these projects and would also like to be on the contact list for those projects and would like to know the office that is processing them and their project managers' names & email addresses.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

AUG 0 4 2009

Attn: Mr. Greg Thomsen
Bureau of Land Management
Barstow Field Office
2601 Barstow Road
Barstow, CA 92311

Subject: Notice of Intent to Prepare an Environmental Impact Statement and Amendment to the California Desert Conservation Area Plan for the Lucerne Valley Solar Project, San Bernardino County, CA.

Dear Mr. Thomsen:

The U.S. Environmental Protection Agency (EPA) has reviewed the July 23, 2009 Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) and Amendment to the California Desert Conservation Area Plan for the Lucerne Valley Solar Project in San Bernardino County, CA. Our comments are provided pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508), and Section 309 of the Clean Air Act.

EPA supports increasing the development of renewable energy resources, as recommended in the National Energy Policy Act of 2005. Using renewable energy resources such as solar power can help the nation meet its energy requirements without generating greenhouse gas emissions. To assist in the scoping process for this project, we have identified several issues for your attention in the preparation of the EIS. We are most concerned about the following issues: impacts to biological resources, habitat, and water resources, as well as the cumulative effects associated with the development of multiple large-scale solar projects.

We appreciate the opportunity to review this NOI and are available to discuss our comments. Please send one hard copy of the Draft EIS and two CD ROM copies to this office at the same time it is officially filed with our Washington D.C. Office. If you have any questions, please contact me at (415) 972-3545 or at mcpherson.ann@epa.gov.

Sincerely,

Ann McPherson
Environmental Review Office

Enclosures: EPA's Detailed Comments

Printed on Recycled Paper

US EPA DETAILED COMMENTS ON THE SCOPING NOTICE FOR THE PROPOSED LUCERNE VALLEY SOLAR PROJECT, SAN BERNARDINO COUNTY, CALIFORNIA, AUGUST 4, 2009

Project Description

Chevron Energy Solutions has requested a right-of-way authorization to construct and operate a 45 megawatt (MW) solar photovoltaic (PV) energy generation facility in San Bernardino County, California. The proposed project would be located on 516 acres of public lands and would be constructed in two phases. Phase 1 would consist of up to 180,000 thin-film PV panels with a generating capacity of 20 MW; Phase II would be similarly configured with a generating capacity of 25 MW. The facility would connect to the existing Southern California Edison 33 kilovolt (kV) distribution system adjacent to the proposed site and include a new switchyard, control/maintenance building, and parking area.

Statement of Purpose and Need

The Draft Environmental Impact Statement (DEIS) should clearly identify the underlying purpose and need to which the Bureau of Land Management (BLM) is responding in proposing the alternatives (40 CFR 1502.13). The *purpose* of the proposed action is typically the specific objectives of the activity, while the *need* for the proposed action may be to eliminate a broader underlying problem or take advantage of an opportunity.

> *Recommendation:*
> The purpose and need should be a clear, objective statement of the rationale for the proposed project. The DEIS should discuss the proposed project in the context of the larger energy market that this project would serve; identify potential purchasers of the power produced; and discuss how the project will assist the state in meeting its renewable energy portfolio standards and goals.

Alternatives Analysis

The National Environmental Policy Act (NEPA) requires evaluation of reasonable alternatives, including those that may not be within the jurisdiction of the lead agency (40 CFR Section 1502.14(c)). A robust range of alternatives will include options for avoiding significant environmental impacts. The DEIS should provide a clear discussion of the reasons for the elimination of alternatives which are not evaluated in detail. Reasonable alternatives should include, but are not necessarily limited to, alternative sites, capacities, and technologies as well as alternatives that identify environmentally sensitive areas or areas with potential use conflicts. The alternatives analysis should describe the approach used to identify environmentally sensitive areas and describe the process that was used to designate them in terms of sensitivity (low, medium, and high).

The environmental impacts of the proposal and alternatives should be presented in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public (40 CFR 1502.14). The potential environmental impacts of each alternative should be quantified to the greatest extent possible (e.g., acres of wetlands impacted, tons per year of emissions produced, etc.).

Recommendations:
The DEIS should describe how each alternative was developed, how it addresses each project objective, and how it will be implemented. The alternatives analysis should include a discussion of alternative sites, capacities, and generating technologies, including different types of solar technologies, and describe the benefits associated with the proposed technology.

The DEIS should describe the current condition of the land selected for the proposed project, discuss whether the land is classified as disturbed, and describe to what extent the land could be used for other purposes.

The DEIS should clearly describe the rationale used to determine whether impacts of an alternative are significant or not. Thresholds of significance should be determined by considering the context and intensity of an action and its effects (40 CFR 1508.27).

The DEIS should expand the alternatives analysis to include consideration of residential and wholesale distributed generation as an alternative. For example, consider an alternative that includes the installation of PV panels in residential and commercial areas near urban load sources.

Water Resources

Water Supply and Water Quality

We understand that PV installations need much less water than solar thermal plants that use water for cooling. We are unclear, however, whether thin-film PV plants use more or less water than traditional PV plants. The DEIS should estimate the quantity of water the project will require and describe the source of this water and potential effects on other water users and natural resources in the project's area of influence. The DEIS should clearly depict reasonably foreseeable direct, indirect, and cumulative impacts to this resource. Specifically, the potentially-affected groundwater basin should be identified and any potential for subsidence and impacts to springs or other open water bodies and biologic resources should be analyzed. The DEIS should include:

- A discussion of the amount of water needed for the proposed solar PV generation facility and where this water will be obtained;
- A discussion of availability of groundwater within the basin and annual recharge rates;

- A description of the water right permitting process and the status of water rights within that basin, including an analysis of whether water rights have been over-allocated;
- A discussion of cumulative impacts to groundwater supply within the hydrographic basin, including impacts from other large-scale solar installations that have also been proposed;
- An analysis of different types of technology that can be used to minimize or recycle water;
- A discussion of whether it would be feasible to use other sources of water, including potable water, wastewater or deep-aquifer water; and
- An analysis of the potential for alternatives to cause adverse aquatic impacts such as impacts to water quality and aquatic habitats.

The DEIS should address the potential effects of project discharges, if any, on surface water quality. Specific discharges should be identified and potential effects of discharges on designated beneficial uses of affected waters should be analyzed. If the facility is a zero discharge facility, the DEIS should disclose the amount of process water that would be disposed of onsite and explain methods of onsite containment.

EPA strongly encourages the BLM to include in the DEIS a description of all water conservation measures that will be implemented to reduce water demands. Project designs should maximize conservation measures such as appropriate use or recycled water for landscaping and industry, xeric landscaping, a water pricing structure that accurately reflects the economic and environmental costs of water use, and water conservation education. Water saving strategies can be found in the EPA's publications *Protecting Water Resources with Smart Growth* at www.epa.gov/piedpage/pdf/waterresources_with_sg.pdf, and *USEPA Water Conservation Guidelines* at www.epa.gov/watersense/docs/app_a508.pdf.

In addition, the DEIS should describe water reliability for the proposed project and clarify how existing and/or proposed sources may be affected by climate change. At a minimum, EPA expects a qualitative discussion of impacts to water supply and the adaptability of the project to these changes.

Clean Water Act Section 404

The project applicant should coordinate with the U.S. Army Corps of Engineers (Corps) to determine if the proposed project requires a Section 404 permit under the Clean Water Act. Section 404 regulates the discharge of dredged or fill material into waters of the United States (WOUS), including wetlands and other *special aquatic sites*. The DEIS should describe all WOUS that could be affected by the project alternatives, and include maps that clearly identify all waters within the project area. The discussion should include acreages and channel lengths, habitat types, values, and functions of these waters. In addition, EPA suggests that the BLM include a jurisdictional delineation for all WOUS, including ephemeral drainages, in accordance with the 1987 *Corps of Engineers Wetlands Delineation Manual* and the December 2006 *Arid West Region Interim Regional Supplement to the Corps of Engineers Wetland Delineation*

Manual: Arid West Region. A jurisdictional delineation will confirm the presence of WOUS in the project area and help determine impact avoidance or if state and federal permits would be required for activities that affect WOUS.

If a permit is required, EPA will review the project for compliance with *Federal Guidelines for Specification of Disposal Sites for Dredged or Fill Materials* (40 CFR 230), promulgated pursuant to Section 404(b)(1) of the CWA ("404(b)(1) Guidelines"). Pursuant to 40 CFR 230, any permitted discharge into WOUS must be the least environmentally damaging practicable alternative (LEDPA) available to achieve the project purpose. The DEIS should include an evaluation of the project alternatives in this context in order to demonstrate the project's compliance with the 404(b)(1) Guidelines. If, under the proposed project, dredged or fill material would be discharged into WOUS, the DEIS should discuss alternatives to avoid those discharges.

The DEIS should describe the original (natural) drainage patterns in the project locale, as well as the drainage patterns of the area during project operations, and identify whether any components of the proposed project are within a 50 or 100-year floodplain. We also recommend the DEIS include information on the functions and locations of WOUS, as well as ephemeral washes in the project area, because of the important hydrologic and biogeochemical role these washes play in direct relationship to higher-order waters downstream.

Clean Water Act Section 303(d)

The CWA requires States to develop a list of impaired waters that do not meet water quality standards, establish priority rankings, and develop action plans, called Total Maximum Daily Loads (TMDLs), to improve water quality.

> *Recommendation:*
> The DEIS should provide information on CWA Section 303(d) impaired waters in the project area, if any, and efforts to develop and revise TMDLs. The DEIS should describe existing restoration and enhancement efforts for those waters, how the proposed project will coordinate with on-going protection efforts, and any mitigation measures that will be implemented to avoid further degradation of impaired waters.

Biological Resources and Habitat

The DEIS should identify all petitioned and listed threatened and endangered species and critical habitat that might occur within the project area. The document should identify and quantify which species or critical habitat might be directly, indirectly, or cumulatively affected by each alternative and mitigate impacts to these species. Emphasis should be placed on the protection and recovery of species due to their status or potential status under the Endangered Species Act (ESA). We recommend that the BLM consult with the U.S. Fish and Wildlife Service and prepare a Biological Opinion under Section 7 of the ESA if there are threatened or endangered species present. The DEIS should provide a recent status update of this report if this action has been or will be undertaken. Analysis of impacts and mitigation on covered species should include:

- Baseline conditions of habitats and populations of the covered species;
- A clear description of how avoidance, mitigation and conservation measures will protect and encourage the recovery of the covered species and their habitats in the project area;
- Monitoring, reporting and adaptive management efforts to ensure species and habitat conservation effectiveness.

EPA is also concerned about the potential impact of construction, installation, and maintenance activities (deep trenching, grading, filling, and fencing) on habitat. The DEIS should describe the extent of these activities and the associated impacts on habitat and threatened and endangered species. EPA is also aware that shade from the PV panels could impact vegetation and/or species in the project area. We encourage habitat conservation alternatives that avoid and protect high value habitat and create or preserve linkages between habitat areas to better conserve the covered species.

Recommendations:
The DEIS should indicate what measures will be taken to protect important wildlife habitat areas from potential adverse effects of proposed covered activities.

The DEIS should discuss the impacts associated with an increase of shade in the desert environment on vegetation and/or species.

The DEIS should discuss the impacts associated with constructing fences around the project site(s), and consider whether there are options that could facilitate better protection of covered species.

Invasive Species

Executive Order 13112, *Invasive Species* (February 3, 1999), mandates that federal agencies take actions to prevent the introduction of invasive species, provide for their control, and minimize the economic, ecological, and human health impacts that invasive species cause. Executive Order 13112 also calls for the restoration of native plants and tree species. If the proposed project will entail new landscaping, the DEIS should describe how the project will meet the requirements of Executive Order 13112.

Recommendation:
The DEIS should include an invasive plant management plan to monitor and control noxious weeds.

Indirect and Cumulative Impacts

The cumulative impacts analysis should provide the context for understanding the magnitude of the impacts of the alternatives by analyzing the impacts of other past, present, and reasonably foreseeable projects or actions and then considering those cumulative impacts in their entirety (CEQ's Forty Questions, #18). The DEIS should clearly identify the resources that may be cumulatively impacted, the time over which impacts are going to occur, and the geographic area that will be impacted by the proposed projects. The DEIS should focus on resources of concern – those resources that are "at risk" and/or are significantly impacted by the proposed projects, before mitigation. In the introduction to the *Cumulative Impacts Section*, identify which resources are analyzed, which ones are not, and why. For each resource analyzed, the DEIS should:

- Identify the current condition of the resource as a measure of past impacts. For example, the percentage of species habitat lost to date.
- Identify the trend in the condition of the resource as a measure of present impacts. For example, the health of the resource is improving, declining, or in stasis.
- Identify all on-going, planned, and reasonably foreseeable projects in the study area that may contribute to cumulative impacts.
- Identify the future condition of the resource based on an analysis of impacts from reasonably foreseeable projects or actions added to existing conditions and current trends.
- Assess the cumulative impacts contribution of the proposed alternatives to the long-term health of the resource, and provide a specific measure for the projected impact from the proposed alternatives.
- Disclose the parties that would be responsible for avoiding, minimizing, and mitigating those adverse impacts.
- Identify opportunities to avoid and minimize impacts, including working with other entities.

The BLM has received more than 150 applications for solar projects in the desert southwest. As a result, BLM and the Department of Energy (DOE) are preparing a Programmatic EIS to address how they will process existing and future solar energy development applications on BLM-administered lands in six Western states. EPA is concerned about the cumulative impacts associated with the development of multiple large-scale solar projects within these states.

Recommendation:
The DEIS should consider the cumulative impacts associated with multiple large-scale solar projects proposed in the desert southwest and the potential impacts on various resources including: water supply, endangered species, and habitat.

The DEIS should identify whether the proposed project is located within one of the solar energy study areas, as defined by the BLM and DOE.

As an indirect result of providing additional power, it can be anticipated that these projects will allow for development and population growth to occur in those areas that receive the generated electricity.

Recommendation:
The DEIS should describe the reasonably foreseeable future land use and associated impacts that will result from the additional power supply. The document should provide an estimate of the amount of growth, its likely location, and the biological and environmental resources at risk.

Climate Change

Scientific evidence supports the concern that continued increases in greenhouse gas emissions resulting from human activities will contribute to climate change. Global warming is caused by emissions of carbon dioxide and other heat-trapping gases. Global warming can affect weather patterns, sea level, ocean acidification, chemical reaction rates, and precipitation rates, resulting in climate change. Reports also indicate that deserts may store as much carbon as temperate forests.

Recommendations:
The DEIS should consider how climate change could potentially influence the proposed projects, specifically within sensitive areas, and assess how the projected impacts could be exacerbated by climate change.

The DEIS should quantify and disclose the anticipated climate change *benefits* of solar energy. We suggest quantifying greenhouse gas emissions from different types of generating facilities including solar, geothermal, natural gas, coal-burning, and nuclear and compiling and comparing these values.

The DEIS should discuss whether any trenching, grading, and filling associated with the construction of these projects and the installation of the solar arrays, will affect the deserts ability to store carbon, and to what degree this may occur.

Air Quality

The DEIS should provide a detailed discussion of ambient air conditions (baseline or existing conditions), National Ambient Air Quality Standards (NAAQS), criteria pollutant nonattainment areas, and potential air quality impacts of the proposed projects (including cumulative and indirect impacts). Such an evaluation is necessary to assure compliance with State and Federal air quality regulations, and to disclose the potential impacts from temporary or cumulative degradation of air quality.

The DEIS should describe and estimate air emissions from potential construction and maintenance activities, as well as proposed mitigation measures to minimize those emissions. EPA recommends an evaluation of the following measures to reduce emissions of criteria air pollutants and hazardous air pollutants (air toxics).

Recommendations:

- *Existing Conditions* – The DEIS should provide a detailed discussion of ambient air conditions, NAAQS, and criteria pollutant nonattainment areas in all areas considered for solar development.

- *Quantify Emissions* – The DEIS should estimate emissions of criteria pollutants from the proposed projects and discuss the timeframe for release of these emissions over the lifespan of the projects. The DEIS should describe and estimate emissions from potential construction activities, as well as proposed mitigation measures to minimize these emissions.

- *Specify Emission Sources* – The DEIS should specify the emission sources by pollutant from mobile sources, stationary sources, and ground disturbance. This source specific information should be used to identify appropriate mitigation measures and areas in need of the greatest attention.

- *Equipment Emissions Mitigation Plan (EEMP)* – The DEIS should identify the need for an EEMP. An EEMP will identify actions to reduce diesel particulate, carbon monoxide, hydrocarbons, and NOx associated with construction activities. We recommend that the EEMP require that all construction-related engines:
  - are tuned to the engine manufacturer's specification in accordance with an appropriate time frame;
  - do not idle for more than five minutes (unless, in the case of certain drilling engines, it is necessary for the operating scope);
  - are not tampered with in order to increase engine horsepower;
  - include particulate traps, oxidation catalysts and other suitable control devices on all construction equipment used at the project sites;
  - use diesel fuel having a sulfur content of 15 parts per million or less, or other suitable alternative diesel fuel, unless such fuel cannot be reasonably procured in the market area; and
  - include control devices to reduce air emissions. The determination of which equipment is suitable for control devices should be made by an independent Licensed Mechanical Engineer. Equipment suitable for control devices may include drilling equipment, generators, compressors, graders, bulldozers, and dump trucks.

- *Fugitive Dust Control Plan* - The DEIS should identify the need for *Fugitive Dust Control Plan.* We recommend that it include these general recommendations:
  - Stabilize open storage piles and by covering and/or applying water or chemical/organic dust palliative where appropriate. This applies to both inactive and active sites, during workdays, weekends, holidays, and windy conditions.
  - Install wind fencing and phase grading operations where appropriate, and operate water trucks for stabilization of surfaces under windy conditions; and
  - When hauling material and operating non-earthmoving equipment, prevent spillage and limit speeds to 15 miles per hour (mph). Limit speed of earth-moving equipment to 10 mph.

Hazardous Materials/Hazardous Waste/Solid Waste

The DEIS should address potential direct, indirect and cumulative impacts of hazardous waste from construction and operation. The document should identify projected hazardous waste types and volumes, and expected storage, disposal, and management plans. It should address the applicability of state and federal hazardous waste requirements. Appropriate mitigation should be evaluated, including measures to minimize the generation of hazardous waste (i.e., hazardous waste minimization). Alternate industrial processes using less toxic materials should be evaluated as mitigation. This potentially reduces the volume or toxicity of hazardous materials requiring management and disposal as hazardous waste.

PV Production/Recycling

PV production can address the full product life cycle, from raw material sourcing through end of life collection and reuse or recycling. PV companies can minimize their environmental impacts during raw material extraction and minimize the amount of rare materials used in the product. PV manufacturing facilities exist that are zero waste and have no air or water emissions. PV companies can facilitate future material recovery for reuse or recycling. Several solar companies have developed approaches to recycling solar modules that enable treatment and processing of PV module components into new modules or other projects. Solar companies can facilitate collection and recycling through buy-back programs or collection and recycling guarantees. Several companies provide recycling programs that pay all packaging, transportation, and recycling costs.

Recommendation:

EPA recommends that the proponent strive to address the full product life cycle by sourcing PV components from a company that: 1) minimizes environmental impacts during raw material extraction; 2) manufactures PV panels in a zero waste facility; and 3) provides future PV disassembly for material recovery for reuse and recycling.

Coordination with Tribal Governments

Executive Order 13175

Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments* (November 6, 2000), was issued in order to establish regular and meaningful consultation and collaboration with tribal officials in the development of federal policies that have tribal implications, and to strengthen the United States government-to-government relationships with Indian tribes.

> *Recommendation:*
>
> The DEIS should describe the process and outcome of government-to-government consultation between the BLM and each of the tribal governments within the project area, issues that were raised (if any), and how those issues were addressed in the selection of the proposed alternative.

National Historic Preservation Act and Executive Order 13007

Consultation for tribal cultural resources is required under Section 106 of the National Historic Preservation Act (NHPA). Historic properties under the National Historic Preservation Act (NHPA) are properties that are included in the National Register of Historic Places (NRHP) or that meet the criteria for the National Register. Section 106 of the NHPA requires a federal agency, upon determining that activities under its control could affect historic properties, consult with the appropriate State Historic Preservation Officer/Tribal Historic Preservation Officer (SHPO/THPO). Under NEPA, any impacts to tribal, cultural, or other treaty resources must be discussed and mitigated. Section 106 of the NHPA requires that Federal agencies consider the effects of their actions on cultural resources, following regulation in 36 CFR 800.

Executive Order 13007, *Indian Sacred Sites* (May 24, 1996), requires federal land managing agencies to accommodate access to, and ceremonial use of, Indian sacred sites by Indian Religious practitioners, and to avoid adversely affecting the physical integrity of such sacred sites. It is important to note that a sacred site may not meet the National Register criteria for a historic property and that, conversely, a historic property may not meet the criteria for a sacred site.

> *Recommendation:*
>
> The DEIS should address the existence of Indian sacred sites in the project areas. It should address Executive Order 13007, distinguish it from Section 106 of the NHPA, and discuss how the BLM will avoid adversely affecting the physical integrity of sacred sites, if they exist. The DEIS should provide a summary of all coordination with Tribes and with the SHPO/THPO, including identification of NRHP eligible sites, and development of a Cultural Resource Management Plan.

Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (February 11, 1994), directs federal agencies to identify and address disproportionately high and adverse human health or environmental effects on minority and low-income populations, allowing those populations a meaningful opportunity to participate in the decision-making process. Guidance[1] by CEQ clarifies the terms low-income and minority population (which includes American Indians) and describes the factors to consider when evaluating disproportionately high and adverse human health effects.

> *Recommendation:*
> The DEIS should include an evaluation of environmental justice populations within the geographic scope of the projects. If such populations exist, the DEIS should address the potential for disproportionate adverse impacts to minority and low-income populations, and the approaches used to foster public participation by these populations. Assessment of the projects' impact on minority and low-income populations should reflect coordination with those affected populations.

Coordination with Land Use Planning Activities

The DEIS should discuss how the proposed action would support or conflict with the objectives of federal, state, tribal or local land use plans, policies and controls in the project areas. The term "land use plans" includes all types of formally adopted documents for land use planning, conservation, zoning and related regulatory requirements. Proposed plans not yet developed should also be addressed it they have been formally proposed by the appropriate government body in a written form (CEQ's Forty Questions, #23b).

---

[1] Environmental Justice Guidance under the National Environmental Policy Act, Appendix A (Guidance for Federal Agencies on Key Terms in Executive Order 12898), CEQ, December 10, 1997.

"Chuck Bell" <chuckb@sisp.net>
08/05/2009 10:19 PM
To <LucerneSolar@BLM.gov>, <Rhollenbacher@chevron.com>
cc <Larry_LaPre@ca.blm.gov>
Subject Emailing: Chevron Scoping

Attached are Lucerne Valley Econ. Dev. Assoc.'s scoping comments re: Chevron Solar project. Signed copies to follow in mail.

Chuck Bell 769 964 3118

The message is ready to be sent with the following file or link attachments:
Chevron Scoping

Note: To protect against computer viruses, e-mail programs may prevent sending or receiving certain types of file attachments. Check your e-mail security settings to determine how attachments are handled.

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August 8,2009
Email Title: no solar fields

Solar fields are not the answer to America's energy needs.

Energy generated by rooftop solar systems will be more reliable, less vulnerable, more quickly installed, and cheaper.

Problems created by solar fields such as dust, wildlife impacts, and flooding stand to destroy the desert environment.

The energy companies have vested interests in "solutions" such as solar fields that will make them the most money. The BLM and the U.S. government need to pay attention to what ordinary people are saying. Ordinary people have had enough of the lies of energy companies.

Cynthia Anderson
5524 Grand Ave.
Yucca Valley, CA 92284
760-228-9062
www.andersonwritingservices.com
www.rainbear.com

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AV 1988
A Better Way of Life

Town of Apple Valley

14955 Dale Evans Parkway • Apple Valley, California 92307

August 11, 2009

BLM Desert District Office
Greg Thomsen
22835 Calle San Juan de Los Lagos
Moreno Valley, Ca. 92553

Re: Lucerne Valley Solar Project – Scoping Comments

Dear Mr. Thomsen

The Town of Apple Valley appreciates the opportunity to comment on the above referenced proposal. The project is located southeasterly of the Town limits and Sphere of Influence. The Town of Apple Valley is providing comment during the public scoping processing so that the concerns of the Town can be addressed in the EIS.

The Town of Apple Valley requests that BLM identify within the EIS any impacts related to traffic to Highway 18 and Bear Valley Road within the Town's Sphere of Influence and within the Town limits. The project will result in additional traffic, both short term (construction traffic) and long term that have the potential to impact Highway 18 and Bear Valley Road as these major thoroughfares are the primary access to the site from I-15. Any impacts that are identified through a traffic study should be mitigated.

The Town of Apple Valley requests that BLM identify within the EIS any impacts related to water resources and water quality.

It would appear that the solar project intends to use the existing SCE distribution power line. If the proposal requires an upgrade to this power line, the impacts associated with the upgrade should be addressed.

If you have any questions on this matter, please call me at (760) 240-7000, Ext. 7222. Town offices are open Monday through Thursday between 7:30 a.m. and 5:30 p.m., and alternating Fridays 7:30 a.m. and 4:30 p.m. **(closed the subsequent Fridays).**

Sincerely,

Carol Miller

Carol Miller
Senior Planner

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August 13, 2009

Email Title: I Support the Lucerne Valley Solar Project

Hello,

I just wanted you to know I live in Johnson Valley and have had family owned property for 56 years and I support the Chevron Lucerne Valley project. Please continue to allow growth and investment in public lands. This is an excellent resource for generations to come. Rich Rohr 50577 Joshua Tree Road Johnson Valley Ca 92285-2822 760-403-0496.

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August 15, 2009
Email Title: Hooray for solar

I'm all for solar anywhere it can be installed. We have plenty of sun so the desert is the perfect place. It will help us get off our reliance on foreign oil.

Gloria Williams
Johnson Valley

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"Chuck Bell" <chuckb@sisp.net>
08/16/2009 03:37 PM
To <LucerneSolar@BLM.gov>, <Rhollenbacher@chevron.com>
cc
Subject Chevron Solar - Lucerne Valley

Greg and Ralph:

Re: Chevron Energy Solutions' PV project in Lucerne Valley::

The scoping session in LV seemed relatively tame. Due to the sheer number of alt. energy proposals confronting us - we can't help but be concerned about global/cumulative issues. But this could be a good location - especially with the adjacent powerline connection.

If you haven't already selected an environmental/land-use consultant - I highly recommend Tom Dodson and Associates. Office in San Bernardino - has handled many desert projects - personally knows all the agency contacts - has biologists on staff - works fast and efficiently - very experienced with NEPA process and documents.

Tom Dodson - 909 882 3612 - tda@tdaenv.com

Let me know if you need any other info.

Will be interesting to see the scoping comments when released.

Chuck Bell 760 964 3118

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August 17, 2009

my comment on the negative effects of lucerne solar.

the proposed solar project at lucerne valley should be denied permits,etc. and not allowed to be built and regulated against because of the excessive amount of damage that would be caused by all the activity and destruction of habitat in this region.the fragility of this desert region is extremely hard to ever repair if at all and fragmenting it is really destructive. if a solar plant was built in the city proper it would revitalize distressed regions that need rebuilt anyway,provide work for locals,cost less to rebuild power lines in the city that probably need upgraded anyway to smart grid as well.

Kim Bauer

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adzei bekoe <adzeibekoe224@msn.com>
08/18/2009 06:56 PM

YOUR KIND ATTENTION :

RE: PROJECT FUND ALLOCATION ;
VIDE PROJECT REFERENCE #:
EB/6791/VOL9/02

I WISH TO NOTIFY YOU THAT YOUR LONG OVERDUE PROJECT FUND HAS BEEN GAZETTED TO BE FINALLY RELEASED TO YOU THROUGH THE FOREIGN REMITTANCE DEPARTMENT OF THIS BANK. MEANWHILE, A WOMAN CAME TO MY OFFICE FEW DAYS AGO WITH A LETTER CLAIMING TO BE YOUR REPRESENTATIVE AND SENT BY YOU.

HERE ARE HER INFORMATION'S:
NAME: BARBARA KLEIHANS
BANK NAME: ATLANTIC BANK OF NEW YORK.
ACCOUNT NUMBER: 08971400101125.

DO CONFIRM TO ME AS A MATTER OF URGENCY IF THIS WOMAN IS FROM YOU SO THAT THIS OFFICE WILL NOT BE HELD RESPONSIBLE FOR WRONGFUL PAYMENT OR UNLAWFUL DIVERSION OF THE PROJECT FUND TO A WRONG PERSON.

THE RESERVE BANK GOVERNOR, EXECUTIVE BOARD OF DIRECTORS AND THE FEDERAL COMMITTEE FOR FOREIGN PROJECT PAYMENT HAS APPROVED FUND ALLOCATION TO THIS REPUTABLE BANK WITH THE OFFICE OF THE DIRECTOR OF FOREIGN REMITTANCE / OPERATIONS TO HANDLE AND TRANSFER ALL PENDING FOREIGN PROJECT/INHERITANCE PAYMENT THROUGH THE FEDERAL GOVERNMENT RESERVE ACCOUNT WITH THE BANK.

WE SHALL PROCEED WITH THE PAYMENT TO THE SAID MRS. BARBARA KLEIHANS IF WE DO NOT HEAR FROM YOU WITHIN 48 HOURS AS WE WILL TAKE IT AS YOU ISSUED AUTHORIZATION TO HER. IF OTHERWISE, YOU ARE TO IMMEDIATELY REPLY ME BACK RECONFIRMING THE

BELOW INFORMATION FOR FINAL APPROVAL/REMITTANCE OF THE FUND PAYMENT TO YOU.
1. FULL NAMES AND PHYSICAL RENTAL ADDRESS (POSTAL ADDRESS)
2. DIRECT TELEPHONE NUMBER OR MOBILE NUMBER (TO FACILITATE EASY COMMUNICATION)
3. AGE AND OCCUPATION
4. NAME AND ADDRESS OF NEXT OF KIN

TO FACILITATE PROMPT RESPONSE, SEND YOUR REPLY TO THE DIRECTOR VIA THE BELOW CONTACT DETAILS;
(Email: adzeibekoe@gmail.com)

THANKS FOR YOUR ANTICIPATED COOPERATION.
BEST REGARDS,
MR. ADZEI BEKOE
FOR: ECO BANK INTL. PLC
TEL:+233 28 519 6822

"Hollenbacher, Ralph Harold" <RHollenbacher@chevron.com>
08/18/2009 09:02 AM
To "Chuck Bell" <chuckb@sisp.net>, <LucerneSolar@BLM.gov>
cc "Don, Juliet C" <Juliet.Don@chevron.com>
Subject RE: Chevron Solar - Lucerne Valley

Thanks Chuck. We realize the sensitivity to cumulative issues. Although we believe that a project such as we are proposing will have minimal impacts on the environment and the community, we can neither ignore nor control the impacts posed by larger energy projects proposed for the area. As you point out, these impact will all need to be assessed systematically in the environmental review processes for the proposed projects.

Unfortunately, we have already selected Ecology and Environment as the contractor for preparing the Environmental Impact Statement and Chambers Group for doing the cultural and biological survey work for the Lucerne project.

Regards,

Ralph Hollenbacher
Senior Manager - Technical Services
Large Scale Renewables
Chevron Energy Solutions
345 California Street, 18th Flr.
San Francisco, CA 94104
Tel: 415 733 4910
Fax: 415 733 4639
Mobile: 415 250-2672

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August 21, 2009

Delivered via electronic mail (lucernesolar@blm.gov) and U.S. mail.

Greg Thomsen, Project Manager
CA Desert District Office
Bureau of Land Management
22835 Calle San Juan de Los Lagos
Moreno Valley, CA 92553-9046

Re: Scoping comments on the Lucerne Valley Solar Project

Dear Mr. Thomsen,

Please accept and fully consider these comments on the Lucerne Valley Solar Project on behalf of The Wilderness Society.

The mission of The Wilderness Society is to protect wilderness and inspire Americans to care for our wild places. We have worked for more than 70 years to maintain the integrity of America's wilderness and public lands and ensure that land management practices are sustainable and based on sound science to ensure that the ecological integrity of the land is maintained. With more than half a million members and supporters nation-wide, TWS represents a diverse range of citizens.

It is clear that the nation's growing addiction to fossil fuels, coupled with the unprecedented threats brought about by global warming, imperil the integrity of our wildlands as never before. To sustain both our wildlands and our human communities, The Wilderness Society believes the nation must transition away from fossil fuels as quickly as possible. To do this, we must eliminate energy waste, moderate demand through energy efficiency, conservation, and demand-side management practices, and rapidly develop and deploy clean, renewable energy technologies, including at the utility-scale.

Our public lands harbor substantial wind, solar, and geothermal resources. Developing some of these resources will be important to creating a sustainable energy economy and combating climate change, and The Wilderness Society supports such responsible development of renewable energy. Renewable resource development is not appropriate everywhere on the public lands, however, and development that does occur on the public lands must take place in a responsible manner.

Continue to Improve the Process

In general, as your agency, the Bureau of Land Management (BLM), processes applications for solar development on public lands, we urge you to continue to improve the process. Among the areas where additional guidance is needed are: incorporating additional Best Management Practices (BMPs), refining the Right of Way (ROW) application process to properly address the differences between solar development and other uses of ROWs, and incorporating recommendations from ongoing transmission planning. In general, BLM should prioritize and help guide renewable energy development toward land that has already been developed for industrial, agricultural, or other intensive human uses which are close to existing transmission over ecologically-intact public lands.

Our organization supports and is actively engaged in a number of multi-stakeholder processes aimed at identifying environmentally appropriate areas for solar energy development in California and the West, including the California Renewable Energy Transmission Initiative (RETI), the Western Governors' Association's Western Renewable Energy Zone process, and the BLM's plan to develop a Programmatic Environmental Impact Statement on Solar Energy. We urge you to incorporate the work of these processes as you move forward with permitting solar energy projects in the desert.

In addition, our organizations have worked with other members of the environmental community in California to develop criteria for use in identifying appropriate areas for development in the CDCA as well as a vision for both the kind of planning and the kind of plan needed to protect the desert's remarkable resources while addressing the climate challenge effectively. Fundamentally, success in selecting appropriate areas and achieving the over-arching objective which we all share will require an unprecedented degree of state and federal cooperation as well as close collaboration with our community. This Environmental Impact Statement prepared in cooperation with tribal, state and local governments is a key step in the kind of cooperation we envision, but it is not sufficient alone. Given what is at stake, such cooperation is unquestionably warranted and it is our hope that the identification and application of these criteria will contribute to that result.

The criteria, which are attached, are designed to help guide renewable development, principally solar development, to appropriate locations. More specifically, the criteria are intended to inform current and future planning processes and to provide ecosystem level protection to the CDCA (including public, private and military lands) by giving preference for development to disturbed lands, steering development away from lands with high environmental values, and protecting the desert's undeveloped cores. Developed with input from field scientists, land managers and conservation professionals, the criteria in essence seek to steer renewable energy projects to areas with comparatively low potential for conflict and controversy in order to facilitate their timely development. In other words, the "message" the criteria are intended to deliver is that to expedite development, avoid areas that will generate significant controversy.

The environmental community will be employing the criteria in reviewing "fast-track" energy projects such as the Lucerne Valley Solar Project, as well as in reviewing proposed solar energy study areas and we encourage your agencies to do so as well. "Fast-track" projects are those which may be able to qualify for stimulus funding through the American Recovery and Reinvestment Act of 2009 by breaking round by December, 2010. Because of the significant timing challenges facing projects seeking permits under such a short timeframe, it is especially important that these projects be screened for characteristics conducive to solar development and potentially difficult or controversial issues. Use of the attached criteria, as well as other screens, will allow your agencies to realistically assess the feasibility of getting projects permitted and "shovel ready" by December, 2010. A realistic assessment of "shovel ready" viability will allow for better allocation of limited agency resources to those projects with the highest likelihood for success.

At the same time, however, we believe it is urgent that BLM work together with stakeholders to develop as quickly as possible a comprehensive approach to evaluating future projects that will ensure that the most appropriate sites for development are utilized while more sensitive sites are protected and preserved. Rather than proceed on a project by project basis in the future, we support a more comprehensive approach to the siting of these projects, the identification of areas appropriate for development, and the prioritization of already disturbed areas. We urge that you begin developing this approach as promptly as possible and would be pleased to help in any way we could.

I. RELATIVE SUITABILITY OF PROJECT PROPOSAL SITE

The Lucerne Valley Solar Project proposal site has both elements conducive to the proposed solar development and issues which will need to be addressed in the agencies' analysis. The sections below outline those characteristics and make recommendations for addressing them.

California Solar Energy Siting Criteria

As indicated above, Lucerne Valley Solar Project has been identified by BLM as a "fast track" project. In reviewing this project, conservation groups will be applying the criteria they developed in addition to considering the issues identified by the agencies and through review of the applicant's documents. Some groups may submit results of this analysis during scoping; we and others may submit results at later date. The agencies would do well to apply these criteria themselves, as well as incorporating the analyses of the groups when they are made available. This is particularly important considering the tight timetable applicable to this project.

Characteristics Conducive to Utility-Scale Solar Development

Like other environmental and conservation groups and as stated above, we believe that solar (and other renewable) development in the CDCA should be steered away from unique and sensitive areas, from the region's undeveloped core, and from lands that are not adjacent to transmission and other needed infrastructure.

The site does not contain designated sensitive and protected areas such as Areas of Critical Environmental Concern, nor has been it been proposed by citizens for designation as wilderness.

The site does have high value solar resources and is close to major infrastructure, private land, and other developments, as well as existing transmission and existing roads.

All of these attributes contribute to the possibility that development of a commercial scale solar facility on this site could result in an overall benefit in limiting the negative impacts of climate change on public lands by decreasing the amount of greenhouse gas emissions from electricity production.

Resource Concerns

There are number of resources on the site that require an in-depth analysis of the impacts of the proposed project and development of a comprehensive impacts minimization and mitigation strategy.

The project site is relatively undisturbed and includes a wash coming down from the San Bernardino Mountains. In addition, the area provides opportunities for horseback riding, hiking, wash walking, and wildflower viewing. Development of such a site requires further study to ensure that other values will not be unacceptably impacted, as well as careful consideration of alternative configurations and alternative sites in the forthcoming federal/state environmental review.

Through the permitting process, BLM and Chevron Energy Solutions may be able to develop this project in a way that supports climate change goals while adequately minimizing and mitigating impacts.

A. Biological Resources

"The DEIS should identify all petitioned and listed threatened and endangered species and critical habitat that might occur within the project area. The document should identify and quantify which species or critical habitat might be directly, indirectly, or cumulatively affected by each alternative and mitigate impacts to these species. Emphasis should be placed on the protection and recovery of species due to their status or potential status under the Endangered Species Act (ESA). The DEIS should include a biological assessment, as well as a description of the outcome of consultation with the U.S. Fish and Wildlife Service under Section 7 of the ESA. Analysis of impacts and mitigation on covered species should include:

- Baseline conditions of habitats and populations of the covered species;
- A clear description of how avoidance, mitigation and conservation measures will protect and encourage the recovery of the covered species and their habitats in the project area;
- Monitoring, reporting and adaptive management efforts to ensure species and habitat conservation effectiveness.

The DEIS should indicate what measures will be taken to protect important wildlife habitat areas from potential adverse effects of proposed covered activities. We encourage habitat conservation alternatives that avoid and protect high value habitat and create or preserve linkages between habitat areas to better conserve the covered species."[1]

Desert Tortoise

The desert tortoise (*Gopherus agassizii*) is protected under federal and state Endangered Species Acts as "threatened" (USFWS 2006). Despite the listing and attention the species receives for recovery and conservation efforts, populations continue to experience decline due to the cumulative impact of human-based stressors.

There are documented occurrences of desert tortoise in the project area. The applicant would be required to relocate any desert tortoise found in the area of potential effect. Identifying relocation habitat can be a complex task, and relocation can impact individual tortoises or entire recovery units. In addition, the applicant would be required to provide mitigation in the form of habitat protection through acquisition and permanent conservation of those lands.

Recommendation: The BLM should prioritize protection of species in the project proposal area by further analyzing potential impacts and developing Best Management Practices and steps to minimize and mitigate any unavoidable impacts.

B. Cultural Resources

The BLM must adequately evaluate the environmental consequences of the proposed project on historic resources. They must address cultural resource issues in the DEIS. The NEPA regulations recognize that impacts to cultural resources such as historic properties and "scientific resources" can comprise a significant impact on the environment. 40 CFR 1508.27(b)(3),(8). Additionally, BLM must analyze the direct, indirect, and cumulative impact of each alternative on areas of importance to local Tribes and areas of high cultural site density.

Additionally, we urge BLM to begin the Section 106 process under the National Historic Preservation Act (NHPA), 16 U.S.C. § 470f, because the project may impact historic properties. The requirements of NHPA are separate from NEPA's requirements, although the Section 106 regulations encourage federal agencies to coordinate the two processes. See 36 C.F.R. § 800.2(a)(4). Proper coordination of the NHPA and NEPA compliance actions is necessary to ensure that adverse effects to historic properties are adequately considered pursuant to the Section 106 regulations, 36 C.F.R. § 800, *et seq.* Proper coordination with Native American tribes will be a central component of the consultation process.

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[1] July 7, 2009 letter from the EPA to the BLM and CEC on the: Notice of Intent to Prepare an Environmental Impact Statement/Staff Assessment and Proposed Land Use Plan Amendment for the Proposed SES Solar One Project, San Bernardino County, California (here in after referred to as "July 7, 2009 letter"). Found at http://www.energy.ca.gov/sitingcases/solarone/documents/others/2009-07-07_Scoping_Comments_from_US_EPA_TN-52483.pdf.

Recommendation: BLM should prioritize protection of the area's cultural resources, including study of the area's resources, development of strategies to minimize and mitigate impacts, and ongoing engagement in consultation with local Native American tribes.

C. Soil Resources

Impacts to soil resources are one of the most challenging issues for solar projects proposed in the desert. As seen in the ongoing permitting process for the proposed Ivanpah Solar Energy Generating System, development of adequate drainage, erosion and sediment control plans is a complicated, time consuming and challenging task. To ensure robust environmental protections and timely completion of permitting documents and steps, it is critical that both the project applicant and the agency dedicate adequate time and resources early in the process to addressing these issues thoroughly.

Recommendation: Chevron Energy Solutions and BLM should dedicate adequate time and resources early in the process to addressing soil resources issues adequately, including through the preparation of a detailed drainage, erosion and sediment control plan that addresses these potential impacts and provides mitigation measures that will render these hazards to a level less than significant.

D. Water Resources

Water is a limited resource in the desert southwest, and any project proposal should fully analyze the water needs and identify sources to meet those needs. However water use for the project will be much less than for other solar technologies, minimizing its impact to water resources compared to alternative technologies.

Recommendation: BLM should gather additional information to confirm that the water needed for the Lucerne Valley Solar Project will be available as well as that the source of the needed water will conform to all laws, ordinances, regulations and standards (LORS).

E. Visual Resources

There will be visual impacts from the construction of the Lucerne Valley Solar Project. Although the visual impacts for this project will be much less than for other solar technologies, the construction of an industrial development anywhere on public lands will entail some visual impacts. Yet, the benefits which the Lucerne Valley Solar Project will provide may well outweigh the costs of the visual impacts from this development.

However, there are a significant number of projects proposed for the California Desert. Accordingly, we urge the BLM to assess not just the visual impacts from this project, but also the likely cumulative visual impacts from proposed renewable energy and transmission development in the Desert and begin now to develop comprehensive mitigation strategies to address these impacts in connection with future projects.

Recommendation: The BLM and Chevron Energy Solutions should continue to collaborate on a visual analysis conforming to BLM regulations to address concerns identified in during the scoping period.

G. Land Use

The Lucerne Valley Solar Project will require a CDCA Plan Amendment, as will all new solar projects. We assume that the environmental review of the proposal and the necessary plan amendment will occur simultaneously. See 43 CFR § 1601.6-3(b).

In addition, the site is adjacent to private parcels. While the private parcels are not part of the project, resources on these parcels and the county's ability to manage these resources could be impacted by construction and operation of the Lucerne Valley Solar Project.

Recommendation: "The DEIS should discuss how the proposed action would support or conflict with the objectives of federal, state, tribal or local land use plans, policies and controls in the project area. The term "land use plans" includes all types of formally adopted documents for land use planning, conservation, zoning and related regulatory requirements. Proposed plans not yet developed should also be addressed it they have been formally proposed by the appropriate government body in a written form (CEQ's Forty Questions, #23b)."[2]

The plan amendment must fully analyze the impacts of industrial development on public lands of an undisturbed nature.

II. OTHER ISSUES RAISED BY THE LUCERNE VALLEY PROJECT PROPOSAL

A. Public Benefits (GhG reduction)

Renewable energy development can have multiple public benefits, most importantly combating climate change by reducing greenhouse gas (GhG) emissions from energy production, and including reduced local and regional air and public health impacts, increased energy resource diversity and decreased price volatility. A reduction in GhG emissions from developing renewable energy is based on comparative emissions from fossil fuel-based energy production.

Because a reduction in GhG emissions is a primary public benefit of renewable energy development, it is critical that the agencies quantify this reduction to the extent possible. The agencies' analysis of GhG reductions should also include a comprehensive look at the project's impacts, including GhG emissions during manufacture, construction, operation, decommissioning, and reclamation of the project site.

The results of this analysis should then be compared to similar analyses for fossil-fuel based energy production, including combined-cycle natural gas fired and coal fired power plants.

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[2] July 7, 2009 letter.

Such an analysis will provide the public a clear indication of the costs and benefits of the proposed project and allow stakeholders to make decisions regarding the project based on the best available science and data.

Recommendation: The BLM should comprehensively analyze the Lucerne Valley Solar Project's net reductions to GhG emissions, including GhG emissions during manufacture, construction, operation, decommissioning, and reclamation of the project site. The analysis should consider both the potential for the project to reduce GhG emissions as well as potential for the project to increase GhG emissions, for example, by disturbing undisturbed land currently useful for carbon sequestration. The results of this analysis should then be compared to the same type of analysis for fossil-fuel based energy production, including combined-cycle natural gas fired and coal fired power plants.

C. Bonding

Based on communications with the BLM, we understand bonding will be required of the applicant for the purpose of decommissioning the project. We fully support the effort of the BLM in creating these bonding requirements, and encourage the Bureau to develop a robust set of guidelines for establishing appropriate bonding figures.

Recommendation: The BLM should do a thorough analysis of the anticipated costs of decommissioning and restoring the project site. The BLM should also require bonds be purchased prior to development.

D. Alternative Sites

Consideration of alternative sites is critical to ensuring the Lucerne Valley Solar Project site chosen is the best possible location for the project. This consideration should be based on solar resource, proximity to existing transmission and infrastructure, and conflicts with other resources and values on the project site. BLM's policy requires consideration of alternatives. The National Environmental Policy Act (NEPA) requires that BLM consider a range of management alternatives, and this analysis is "the heart of the environmental impact statement." 40 C.F.R. § 1502.14. NEPA requires BLM to "rigorously explore and objectively evaluate" a range of alternatives to proposed federal actions. See id. §§ 1502.14(a) and 1508.25(c). "An agency must look at every reasonable alternative, with the range dictated by the nature and scope of the proposed action."[3] An agency violates NEPA by failing to "rigorously explore and objectively evaluate all reasonable alternatives" to the proposed action.[4] This evaluation extends to considering more environmentally protective alternatives and mitigation measures.[5]

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[3] Northwest Envtl Defense Center v. Bonneville Power Admin., 117 F.3d 1520, 1538 (9th Cir. 1997).

[4] City of Tenakee Springs v. Clough, 915 F.2d 1308, 1310 (9th Cir. 1990) (quoting 40 C.F.R. § 1502.14).

[5] *See, e.g.,* Kootenai Tribe of Idaho v. Veneman, 313 F.3d 1094,1122-1123 (9th Cir. 2002) (and cases cited therein).

NEPA requires that an actual "range" of alternatives is considered, such that the Act will "preclude agencies from defining the objectives of their actions in terms so unreasonably narrow that they can be accomplished by only one alternative (i.e. the applicant's proposed project)."[6] This requirement prevents the EIS from becoming "a foreordained formality."[7] "Note that NEPA requires evaluation of reasonable alternatives, including those that may not be within the jurisdiction of the lead agency (40 CFR Section 1S02.14(c))."[8]

It is the BLM's responsibility to identify alternative sites to be analyzed and it may be that options rejected previously should be re-evaluated. Without thorough consideration of multiple alternative sites, the BLM will have reduced the EIS to a "foreordained formality" and improperly limited the alternatives under consideration.

"The environmental impacts of the proposal and alternatives should be presented in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public (40 CFR 1502.14). The potential environmental impacts of each alternative should be quantified to the greatest extent possible (e.g., acres of wetlands impacted, tons per year of emissions produced, etc.)."[9]

As previously expressed in these comments, we strongly encourage the BLM to engage in a broader landscape level assessment of solar development in the desert. While a comprehensive desert plan balancing multiple land uses including solar will be a long term process, in the interim we urge the agencies to compare the Lucerne Valley Solar Project, and all other fast track projects, to each other in order to identify which of these first phase of projects is likely to have the least environmental impacts.

Recommendation: The BLM must thoroughly consider and present the public with a true range of alternative sites. "Reasonable alternatives should include, but are not necessarily limited to, alternative sites, capacities, and technologies as well as alternatives that identify environmentally sensitive areas or areas with potential use conflicts."[10] We encourage the BLM to analyze an alternative project site on previously disturbed lands.

In addition the agencies should compare the Lucerne Valley Solar Project and its impacts with all other identified "fast-track" projects on BLM land in order to identify the least environmentally harmful projects among the applications that have been selected for expedited permitting.

Thank you for your consideration of these comments.

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[6] Colorado Environmental Coalition v. Dombeck, 185 F.3d 1162, 1174 (10th Cir. 1999), citing Simmons v. United States Corps of Engineers, 120 F.3d 664, 669 (7th Cir. 1997).

[7] City of New York v. Department of Transp., 715 F.2d 732, 743 (2nd Cir. 1983). *See also*, Davis v. Mineta, 302 F.3d 1104 (10th Cir. 2002).

[8] July 7, 2009 letter.

[9] July 7, 2009 letter.

[10] July 7, 2009 letter.

Sincerely,

The Wilderness Society
Alice Bond, Public Lands Associate
California/Nevada Regional Office
655 Montgomery Street, Suite 1000
San Francisco, CA 94111

The Wilderness Society
Alex Daue, Renewable Energy Coordinator
BLM Action Center
1660 Wynkoop St. Suite 850
Denver, CO 80202

August 22, 2009

From
Betty Munson
4880 Bonanza Rd.
Johnson Valley, CA 92285
760-364-2646

To
Greg Thomsen, BLM Program Manager
Mickey Quillman, BLM
Ralph Hollenbacher, Chevron Energy Solutions
Dave Plumpton, E&E

Dear Sirs,

I am writing as a private citizen, not as a representative of any organizations to which I belong. Please feel free to contact me about any questions you may have about these statements. Please add me to your mailing list on this project.

OLD WOMAN SPRINGS RD. (SR 247) is a County Scenic Route.
"Scenic Routes play an important role in the preservation and protection of environmental assets. Scenic Route designations recognize the value of protecting scenic resources for future generations and place restrictions on adjacent development including specific sign standards regarding sign placement and dimensions, utility placement, architectural design, grading, landscaping characteristics and vegetation removal." – County of San Bernardino General Plan

The process is under way to have SR247, from Yucca Valley through Lucerne Valley and up to Barstow, designated as a California Scenic Highway.

The Homestead Valley Community Council and the Lucerne Valley Economic Development Association support the research now in progress to have Old Woman Springs Road declared an Historic Road.

The fact that this proposed solar project may not be visible in its entirety from Old Woman Spring Rd. (SR247) does not negate the fact that it is just the first solar proposal to get to the Public Scoping stage.

Industrial-scale installations on public lands are a questionable use of multi-use lands. The study **must** address the uglification effect of this first installation: the effect on the values of surrounding private lands; causing the easily foreseeable sale of private lands and permitting of other public lands for other renewable energy installations; and the negative impact that this proliferation and inevitable transmission lines will have on the scenic/historic route from which they will be visible.

Visual impact counts! The rural communities and the open spaces surrounding them are the goal of many who leave the urban sprawl behind for recreation in the desert. The rural communities depend in large measure on the tourist dollar, as does the county, as does the state.

Frederick Law Olmstead said it far better than I can, in his *Report of State Park Survey of California, 1929.*

"Certain desert areas have a distinct and subtle charm, in part dependent on spaciousness, solitude, and escape from the evidence of human control and manipulation of the earth, a charm of constantly growing value as the rest of the earth becomes more completely dominated by man's activities. This quality is a very vulnerable one….Nowhere else are casual thoughtless human changes in the landscape so irreparable, and nowhere else is it so important to control and completely protect wide areas."

Everybody knows this by now. Even multinational energy companies. What everybody may not realize is that protecting the rural desert communities and the public open spaces that surround them is just as important as protecting wilderness and wildlife habitat.

Chevron Energy Solutions already know how to install solar panels on roof tops. I ask that they continue to do so and leave the desert alone.

Betty Munson

Appendix H
Scoping Meeting Sign-In Sheets and Speaker Cards

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Bureau of Land Management

Public Scoping Meeting

Lucerne Valley Solar Project EIS

Lucerne Valley, CA – July 29, 2009

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SIGN-IN SHEET

Presentation starting promptly at 7:00 PM *(PLEASE PRINT LEGIBLY)*

Name	Affiliation	Address	Phone Number	Email	Would you like to be on the mailing list to receive project updates?
Blanche Kraft		P.O. Bx 723 LV	248-7942		
CHRISTIE ROBINSON Also live in Lucerne Valley	MOJAVE ENVIRONMENT EDUCATION CONSORTIUM	14306 PARK AVE VICTORVILLE 92395	245-1661x 6101	christier@mdaqmd.ca.gov	Yes
Donna Thomas	Calif Desert Coalition	P.O. Box ~~80~~ 813 Morongo Valley, CA 92256	369-8917	thomasruby2@ verizon.net	~~Y~~ No
Betty Munson	JVIA, AREP PFJV	4880 Bonanza RD Johnson Valley	364-2646	ranchotaj@gmailcom	Yes
Catharine Janowicz Jim Harvey	JVIA HVCC AREP	50220 Saddle Rock Way		desertmoon2@live.com	Yes
RICHARD SELBY	LUMAC LVEDA	P.O. BOX 941 LV 92356		richard@gentryselby.com	YES
Daryl & Cindy Lazenby	Property owners	POBOX 845 Lucerne Vly			Yes

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Name	Affiliation	Address	Phone Number	Email	Would you like to be on the mailing list to receive project updates?
CLAUDIA SALL	CDC	YV, CA 92286 PO BOX 1598	760 365 9366	Sallwildcards@ gmail.com	Yes
Jennifer Hinojosa		31351 Rabbit Springs Rd L.V. 92356	760 680-9456	jjrestorationservice@yahoo.com	✓
Jim Hart		51568 DUNDEE RD	760 364-4829	JHAFLAME@AOL.COM	
C. HAWKINS	FOGR	59873 IVANHOE Yucca Valley	760 365-5983		✓
MIKE HAWKINS	FOGR	SAME ↑	365-5983	MPHCDH@WMCONNECT.COM	✓
D'Anne Albers	DEFENDERS of WILDLIFE	PO BOX 953 J.T. 92252	361 - 7416	DAlbers@defenders.org	X
Felix Wu		P.O.BOX 1097 Lucerne Valley CA 92356	760-401 2456	Felixcwu@hotmail.com	✓

FOGR = Friends of Giant Rock

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Name	Affiliation	Address	Phone Number	Email	Would you like to be on the mailing list to receive project updates?
BoB Burks	SCBS	Po Box 1407 Yermo CA 92398	760 254 6001	OASis pAlms@verizon.net	✓
Gary Hatfield	SCBS	36986 Kilkare Rd Mentone, CA 92359	(909) 794-3385	mtnhomehat@yahoo.com	Yes
Linda Gommel Ernie Gommel	Lucerne Valley Mkt + Hardware	PO Box 749 L.V. 92356	760 2487311	lvstore@sisp.net	Yes
Eddie Sims.	citizen	35893 Old Woman Springs Rd. LV 92356	760248-7454		yes.
Bill Lembright Jan Lembright	Lucerne Valley Market & Hardware	PO Box 749 LV 92356	(760)248-7311	lvstore@sisp.net	yes
David Danelski	The Press Enterprise	3450 14th St Riverside, CA 92501	951-368-9471	ddanelski@pe.com	yes

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Name	Affiliation	Address	Phone Number	Email	Would you like to be on the mailing list to receive project updates?
BRADLEY EVANS	CitIZEN	P.O. BOX 1055 L.V. Ca 92356	760- 963-7556	elwhoppero@hotmail.com	Yes
Kate Rosenberg	L.V. leader		760. 248.7878	Krosenberg@vvdailypress.com	yes
KENZIE RIESSELMAN	interested in project			Kenz@uwalumni.com	yes
Eric Weiss	CDFG	12550 Jacaranda Ave. Victorville CA 92395		eweiss@dfg.ca.gov	Yes
Roger Peterson	LV LAND OWNER & myJeeptraks.com	7979 SKY HIGH LN. LV, CA 92356	760-403-8241	nbuyn@gotsky.com	YES
GREGORY BURLIN	PROPERTY OWNER	9271 BAKER RD. P.O. BOX 681 L.V CA. 92356	760.248.6633	gBURLIN5@GMAIL.COM	YES

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Name	Affiliation	Address	Phone Number	Email	Would you like to be on the mailing list to receive project updates?
LARRY MAYER	RESIDENT	PO Box 1083 LUCERNE VALLEY CA 92356		LARRYMAYER@HOTMAIL.COM	Yes
GLEN DAVIDSON	RES	9153 OXBOW Rd LV		KGUYGLEN@SBCGLOBAL.NET	Y
Gary Applegate	Resident	PO Box 1879 LV 92356			Yes
Dennis Ford	Resident	PO Box 1628 Lucerne 92356		dennisford@gmail.com	Yes
MIKE/[illegible]	FOGR	57873 IVANHOE YUCCA VALLEY	760 365 5983	MPHCDH2@WMCONNECT.COM	
GARY STATER	Property Owner	P.O. Box 9	760-247-7231	gr.stater@verizon.net	yes
Ray Pessa Mary Jo Pessa	FOGR	58725 Natoma Tr	760-365-7449	pessar1@netzero.com	yes

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Name	Affiliation	Address	Phone Number	Email	Would you like to be on the mailing list to receive project updates?
Ron Chapman	prop. owner	P.O.B 152 L.V	626 791-3794	rcchapman@AVC.EDU	yes
TERRY HOLLIS	" "	POB 112 L.V.	248-2903	GMR@SISP.NET	YES
Chad Burlin	prop. owner	9271 Baker Rd.	(760) 248-6633	burlin5@gmail.net	Yes
Jim Mesnard	LLUVIA	36266 Wilshire	760 248-9657	Jim@RAck-it-up.com	YES
Carrie Hyke	County of San Bernardino	385 N. Arrowhead Ave. San B.	(909) 387-4147	Chyke@LUSD.SBCounty.Gov.	Yes
Kassandra Fischer	~~Co~~ " "	"	"	Kfischer@LUSD.SBCounty.Gov	

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Name	Affiliation	Address	Phone Number	Email	Would you like to be on the mailing list to receive project updates?
Wendy Clouser		36163 Smokebush PO Box 2343 Lucerne Valley, CA	760 8103735	YES →	
Ted + Joyce Vlahos		38430 Oldwoman Spr Rd L.V. Ca	760 248-6910		
Paul Malone		36140 Olive St Lucerne Vly	248-6592		YES
CARL COLEMAN		19531 Hwy 18 APPLE VALLEY 92307	760-242-9900	ALTECENG@AOL.COM	YES
Helen Baker		5004 ENFIELD AVE. ENCINO, Ca 91316	818-705-3930	bakerhab@aol.com	YES
KENNY ENT		17222 SYCAMORE LN. Apple Valley, CA.	760-285-6958	KENT@pauleyc.com	YES
Barb & Jeff LaGrange		18220 FERN RD LV	248-6777		NO

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Name	Affiliation	Address	Phone Number	Email	Would you like to be on the mailing list to receive project updates?
ERNEST TIBBS		LUCERNE VALLEY PO BOX 1375			
Billy & Julie Mitchell		JOHNSON Valley 70 2A	760 447 3903	~~Re~~ rattlesnakecanyonranch @gmail.com	
Peter Peña		36 325 Smokebush Rd L.V. CA. ~~956~~ 92356			Yes
Raymond Rejisle		11122 TRADEPost Road Lucerne Valley Ca 12356	None		
ED TEIGEN		9930 CUSTER	248 2601	rusty@sisp.net	yes
Jo RicHARDS		32226 HOLMES P.O. BOX 482	248-9354	EDR@SISP.NET	YES
Barbara Veale		PO Box 1179	248-7208		yes

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Name	Affiliation	Address	Phone Number	Email	Would you like to be on the mailing list to receive project updates?
RANDY & GINGER Coleman		19531 HWY 18 APPLE VALLEY, CA 92307	(760) 242-9900	RANDYAKP@AOL.COM GINGERECOLEMAN@AOL.COM	YES
John Beavor		PO Box 1216 Lucerne Valley 92356	(760) 248 7448	Goatgirl@sisp.net	okay
Patti Riddle		POBX 682 Lucerne Vly	760 248 2062	mpgku1972@yhoo.com	Yes
Mar Riddle		P.O Box 640 Lucern Vly	760 248-2277	mgcoogar67_73@hotmail.com	Yes
April Sall	CDC	P.O Box 395 Pioneertown, CA	760 369-7105	—	
Jamie Hall	TWC	P.O. Box 395 Pioneertown, CA	760 369 7105	jamie@wildlandsconservancy.org	Yes
Jeff Croux		31351 Rabbit Springs Rd LV.	760-680-9819	JJRestorationService@yahoo.Com	Yes

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Name	Affiliation	Address	Phone Number	Email	Would you like to be on the mailing list to receive project updates?
Chuck Bell	L.U. Econ. Dev. Assoc.	P.O. Box 193 Lucerne Valley, CA 92356	760 964 3118	chucsb@sisp.net	Yes
Steve Colangelo		31222 Sherwood St. Lucerne Valley CA 92356	760-248-7462	drcolangelo@hotmail.com	No

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Name	Affiliation	Address	Phone Number	Email	Would you like to be on the mailing list to receive project updates?
SCOTT FRIER	DEVELOPER		(760) 962-9200	sdfrier@msn.com	

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Name	Affiliation	Address	Phone Number	Email	Would you like to be on the mailing list to receive project updates?
ANDY SILVA	SBCOUNTY	385 N. ARROWHEAD AVE 5TH FLOOR SAN BERNARDINO 92415	909 387-4361	ASILVA@SBCOUNTY.GOV	YES

①

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Public Scoping Meeting
Lucerne Valley Solar Project EIS

SPEAKER CARD

ONTACT INFORMATION – *please print legibly*

ame: Paul (Tony) Malone

dditional information optional)

filiation: VVC & MAC & MDAQMD

ailing Address: 36140 Olive St

y, State, Zip: Lucerne Valley CA, 92356

one: (760) 248-6592

nail: TONYMALONE44@Hotmail.com

Note: Before including your address, telephone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment, including your personal identifying information, may be made publicly available at any time. While you may ask used in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. All submissions from individuals identifying themselves as representatives or officials of organizations or businesses will be made available for public inspection in their entirety.

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Public Scoping Meeting
Lucerne Valley Solar Project EIS

SPEAKER CARD

ONTACT INFORMATION – *please print legibly*

me: LARRY MAYER

ditional information optional)

liation: —

ling Address: Po Box 1083

, State, Zip: LUCERNE VALLEY CA 92356

one: 760 2486549

ail: LARRYMAYER@HOTMAIL.COM

Note: Before including your address, telephone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment, including your personal identifying information, may be made publicly available at any time. While you may ask used in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. All submissions from individuals identifying themselves as representatives or officials of organizations or businesses will be made available for public inspection in their entirety.

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SPEAKER CARD

CONTACT INFORMATION – *please print legibly*

Name: JEFF ARONOLD

(Additional information optional)

Affiliation: CONSERENEC RESIDENT

Mailing Address: PO BOX 1902

City, State, Zip: LV CA 92356

Phone: 760 885-2639

Email:

Note: Before including your address, telephone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment, including your personal identifying information, may be made publicly available at any time. While you may ask used in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. All submissions from individuals identifying themselves as representatives or officials of organizations or businesses will be made available for public inspection in their entirety.

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SPEAKER CARD

CONTACT INFORMATION – *please print legibly*

Name: HARRY BAKER

(Additional information optional)

Affiliation: CA4WDC / PFJV

Mailing Address: 5004 ENFIELD AVE

City, State, Zip: ENCINO CAL 91316

Phone: 818-705-3930

Email: BAKERHAB@AOL.COM

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5

Bureau of Land Management

Public Scoping Meeting
Lucerne Valley Solar Project EIS

SPEAKER CARD

ONTACT INFORMATION – *please print legibly*

ame: GLEN DAVIDSON
Additional information optional)
ffiliation: RES
ailing Address: 9153 OX BOW
ity, State, Zip: LV
hone: 248-~~77~~1933
mail: KG4YGLEN@SBCGLOBAL.NET

Note: Before including your address, telephone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment, including your personal identifying information, may be made publicly available at any time. While you may ask used in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. All submissions from individuals identifying themselves as representatives or officials of organizations or businesses will be made available for public inspection in their entirety.

6

Bureau of Land Management

Public Scoping Meeting
Lucerne Valley Solar Project EIS

SPEAKER CARD

ONTACT INFORMATION – *please print legibly*

ame: Ray Pessa
Additional information optional)
ffiliation: FOGR
ailing Address: 58725 NATOMA
ity, State, Zip: Yucca Valley Ca 92284
hone: 760 365 7449
mail: PESSARU @ Netzero. Net

Note: Before including your address, telephone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment, including your personal identifying information, may be made publicly available at any time. While you may ask used in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. All submissions from individuals identifying themselves as representatives or officials of organizations or businesses will be made available for public inspection in their entirety.

7

Bureau of Land Management
Public Scoping Meeting
Lucerne Valley Solar Project EIS
SPEAKER CARD

CONTACT INFORMATION – *please print legibly*

HATFIELD

Name: Gary S. Hatfield

(Additional information optional)

Affiliation: Society for Conservation of Bighorn Sheep

Mailing Address: 36986 Kilkare Rd

City, State, Zip: Mentone, CA 92359

Phone: (909) 794-3385

Email: mtnhomehat@yahoo.com

Note: Before including your address, telephone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment, including your personal identifying information, may be made publicly available at any time. While you may ask used in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. All submissions from individuals identifying themselves as representatives or officials of organizations or businesses will be made available for public inspection in their entirety.

8

Bureau of Land Management
Public Scoping Meeting
Lucerne Valley Solar Project EIS
SPEAKER CARD

CONTACT INFORMATION – *please print legibly*

Name: D'Anne Albers

(Additional information optional)

Affiliation: DEFENDERS of WILDLIFE

Mailing Address:

City, State, Zip:

Phone:

Email:

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9

Bureau of Land Management
Public Scoping Meeting
Lucerne Valley Solar Project EIS
SPEAKER CARD

ONTACT INFORMATION – *please print legibly*

me: Chad Burlin
iditional information optional)
liation:
iling Address:
, State, Zip:
ne:
ail: burlin5@gmail.net

Note: Before including your address, telephone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment, including your personal identifying information, may be made publicly available at any time. While you may ask used in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. All submissions from individuals identifying themselves as representatives or officials of organizations or businesses will be made available for public inspection in their entirety.

10

Bureau of Land Management
Public Scoping Meeting
Lucerne Valley Solar Project EIS
SPEAKER CARD

ONTACT INFORMATION – *please print legibly*

me: Jim McShold
dditional information optional)
iliation: None
iling Address: PO Box 2013
y, State, Zip: Lucerne valley 92356
one: 760-248-9657
ail:

Note: Before including your address, telephone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment, including your personal identifying information, may be made publicly available at any time. While you may ask used in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. All submissions from individuals identifying themselves as representatives or officials of organizations or businesses will be made available for public inspection in their entirety.

11

Bureau of Land Management

Public Scoping Meeting
Lucerne Valley Solar Project EIS

SPEAKER CARD

CONTACT INFORMATION – *please print legibly*

Name: Roger Peterson
(Additional information optional)
Affiliation: Local Propery Owner
Mailing Address: 7979 sky High Ln
City, State, Zip: LV 92356
Phone: 760 403-8241
Email: nbujm@gotsky.com

Note: Before including your address, telephone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment, including your personal identifying information, may be made publicly available at any time. While you may ask used in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. All submissions from individuals identifying themselves as representatives or officials of organizations or businesses will be made available for public inspection in their entirety.

12

Bureau of Land Management

Public Scoping Meeting
Lucerne Valley Solar Project EIS

SPEAKER CARD

CONTACT INFORMATION – *please print legibly*

Name: CLAUDIA SALL
(Additional information optional)
Affiliation: Calif Desert Coalition
Mailing Address: PO Box 1508
City, State, Zip: Yucca Valley, CA
Phone: [illegible]
Email: sallwildlands@gmail.com

Note: Before including your address, telephone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment, including your personal identifying information, may be made publicly available at any time. While you may ask used in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. All submissions from individuals identifying themselves as representatives or officials of organizations or businesses will be made available for public inspection in their entirety.

13

Bureau of Land Management

Public Scoping Meeting
Lucerne Valley Solar Project EIS

SPEAKER CARD

CONTACT INFORMATION – *please print legibly*

Name: April Sall

(Additional information optional)

Affiliation: The Wildlands Conservancy

Mailing Address: P.O. Box 395

City, State, Zip: Pioneertown, CA 92268

Phone: 760 369-7105

Email: jamie@wildlandsconservancy.org

Note: Before including your address, telephone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment, including your personal identifying information, may be made publicly available at any time. While you may ask used in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. All submissions from individuals identifying themselves as representatives or officials of organizations or businesses will be made available for public inspection in their entirety.

Appendix I
Newspaper Articles

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Home

Chevron says L.V. solar project to begin construction this year

Second project slated for California, Nevada border near Primm

By JESSICA CEJNAR, Staff Writer

The Bureau of Land Management, Southern California Edison and Chevron are seeking public comment on two solar-related projects at either end of the High Desert.

In Lucerne Valley, Chevron Energy Solutions plans to construct a 45-megawatt solar project using photovoltaic panels.

At the other end of the desert, Southern California Edison plans to build a new substation in the Ivanpah Valley and connect it to another substation on the Nevada side using 35 miles of upgraded transmission lines. The project will support the solar energy project proposals in the Ivanpah area including the Ivanpah Solar Electric Generating System, a 400-megawatt project that will be located about three miles from the stateline.

Jerry Silva, SCE project manager for renewable projects, said with the number of projects being developed for the Ivanpah area — about 1,400 megawatts in capacity — it was necessary to build a new substation and upgrade the existing transmission lines. The transmission lines will connect the Ivanpah projects to SCE's Eldorado substation near Boulder City, Nev.

SCE filed its project application with the Bureau of Land Management and the California Public Utilities Commission on May 28, Silva said. The project is expected to be operational and complete in 2013.

Rather than being used to benefit specific homes in the Mojave Desert, the power generated from the proposed solar projects at Ivanpah will be returned to the California power grid that serves the entire state, SCE spokesman Paul Klein said. This project is part of SCE's $20 billion capital improvement plan to build new transmission lines on the existing California power grid over the next five years, he said.

Juliet Don, manager of media and public relations for Chevron Energy Solutions, said Chevron is still at the beginning stages of its project. According to a press release issued Tuesday by the BLM, construction is expected to begin Dec. 1, 2010. The project will be located about eight miles east of Lucerne Valley. The project will consist of the construction of two phases, one capable of generating 20 megawatts of electricity and the other capable of generating 25 megawatts. A switchyard, control and maintenance building and a parking area will also be constructed.

Chevron and BLM representatives will hear from the public at the Lucerne Valley Community Center in Lucerne from 6:30 to 8:30 p.m. July 29. Another public meeting will be held at the Family Life Public Enterprise Center in San Bernardino July 30 from 6:30 to 8:30 p.m. Questions and comments can be e-mailed to LucerneSolar@blm.gov.

Public meetings for the Southern California Edison project will be at Primm Valley Golf Course near Primm, Nev. from 4 to 7 p.m. July 28, and at the South Point Hotel Casino and Spa in Las Vegas from 6 to 9 p.m. on July 29. Representatives from the California Public Utilities Commission will be at both meetings. More information can be found at www.cpuc.ca.gov/ivanpah.html. The public can comment by e-mailing caeit@blm.gov

The public comment period for both projects is 30 days, but David Briery, BLM spokesman for the California Desert District said the public will be able to comment after each project phase is completed.

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Solar energy proposal in Lucerne Valley opposed

Download story podcast

10:00 PM PDT on Thursday, July 30, 2009

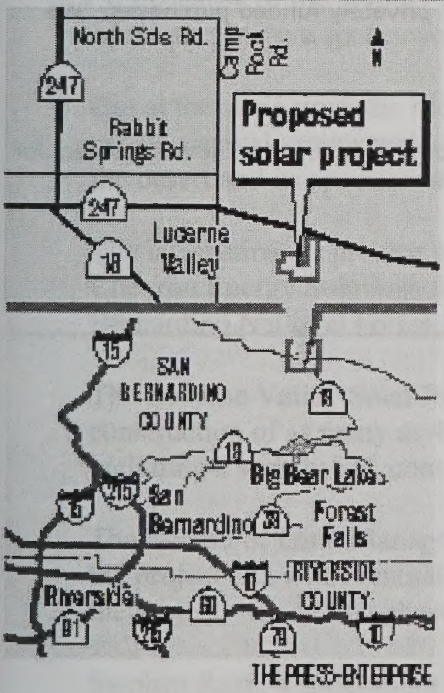
By DAVID DANELSKI
The Press-Enterprise

Outside a Lucerne Valley elementary school auditorium, local resident Chuck Bell pointed to the vast desert to the north and explained that much of it is played-out farmland that would be ideal for solar energy development.

Water is no longer available for farming there because water tables have dropped or farmers have sold water rights, said Bell, a former San Bernardino County official who is now secretary of a Lucerne Valley economic development group.

"It's all disturbed (from farming)," Bell said Wednesday evening. "It's got infrastructure. It's near roads and power lines. ... And it can't be used for anything else."

Story continues below



Inside the auditorium, an official with Chevron Energy Solutions, a subsidiary of the Chevron USA oil company, described plans to blanket 516 acres of undisturbed public land with photovoltaic panels that would generate enough solar electricity for 20,000 homes. The property is north of the San Bernardino Mountains, about eight miles east of the school.

Greg Thomsen, a U.S. Bureau of Land Management program manager, explained to an audience of about 60 people -- mostly desert residents -- that the bureau is committed to sustainable energy development on public land, subject to proper environmental review.

Last month, U.S. Interior Secretary Ken Salazar announced that the government would streamline the application process for alternative-energy projects on federal lands in the West to meet new demands for clean power.

The Chevron official, Ralph Hollenbacher, a senior technical service manager based in San Francisco, said it's more expedient for Chevron to develop solar energy on public land because the company can do "one-stop shopping" with the BLM to get access to large amounts of land and get environmental reviews completed.

Buying private land would require dealing with multiple landowners and still require environmental reviews, Hollenbacher said after the meeting. The cost of acquiring private land isn't a factor, he said.

Chevron's Lucerne Valley proposal is one of 159 wind and solar projects proposed on California public land managed by the BLM, a division of the U.S. Department of Interior under Salazar's leadership.

Some people at the meeting said they were concerned about the cumulative effect of a rush to develop energy on undisturbed land that is home to threatened desert tortoises and other wildlife.

Several also agreed with Bell, secretary of Lucerne Valley Economic Development Associates, saying the energy developments should be built on former farms and other private land that has less value as wildlife habitat.

"It's a land rush for renewable energy," said Gary Hatfield of Mountain Home Village, a small community east of Redlands. "Are we going to trade our public resources, places used by animals, for questionable energy technologies that 20 years from now may be obsolete?"

There isn't an endless supply of untouched habitat, one speaker said.

"Mother Nature is not making more pristine lands," said April Sall, a preserve manager for The Wildlands Conservancy, an Oak Glen-based group that protects open spaces through privately funded purchases. "We have to be careful with what we have."

No one in the audience voiced clear support of the project.

The evening meeting at Lucerne Valley Elementary School sought public comments for the Chevron project for preparation of an environmental study expected to be released later this year.

Reach David Danelski at 951-368-9471 or ddanelski@PE.com

RENEWABLE ENERGY: With clock ticking on stimulus, solar developers double down on Mojave (07/30/2009)

Environmentalists are growing increasingly concerned that energy companies are rushing solar-power projects in California's Mojave Desert to qualify for federal economic stimulus money.

The $787 billion American Recovery and Reinvestment Act, signed by President Obama in February, contains billions of dollars in federal grants that could pay up to 30 percent of the cost to build a solar array, wind farm or geothermal power plant.

But to qualify for the grants, project applicants must have completed their environmental reviews, have obtained federal and state permits and have their projects "shovel ready" by December 2010, federal regulators and industry officials say.

That is a big factor behind a recent surge in proposed solar-power projects in the Mojave Desert, which government and industry officials describe as the nation's best region for large-scale solar development.

"It's because of the number of sunny days, dry clear air, and the intensity of the sun," said Monique Hanis, a spokeswoman for the Solar Energy Industries Association.

But at the same time, the Mojave region is drawing increased attention from environmental groups and sympathetic lawmakers who are stepping up efforts to protect the desert and its species before a glut of solar projects moves forward.

The latest stirrings involve a 45-megawatt photovoltaic solar power plant proposed by Chevron Energy Solutions for San Bernardino County, Calif., just north of San Bernardino National Forest.

The Lucerne Valley Solar Project would occupy 516 acres of desert land and involve the construction of as many as 400,000 photovoltaic panels and associated infrastructure, including a switchyard, control and maintenance building, and parking area.

The Bureau of Land Management this week initiated a first round of public comment on the project and will eventually complete a full environmental impact statement (EIS) for the project, whose first phase is scheduled to begin construction in December 2010.

Stephen Razo, a spokesman for BLM's California Desert District, said a draft EIS could be ready by the end of the year. "Our challenge is to ensure that the renewable energy development is compatible with our multiple-use guidance," Razo said.

Juliet Don, a spokeswoman for San Francisco-based Chevron Energy Solutions, said the company is confident the project will sail through the public scoping and permitting process. "We wouldn't propose a project where we don't think we'd be able to ... get it approved," she said.

But environmental groups are girding for a fight, citing the project's likely effects on the federally endangered desert tortoise and other sensitive species.

"It's definitely within desert tortoise habitat out there, so there could be some conflicts," said Ileene Anderson, a staff biologist for the Center for Biological Diversity in Los Angeles. "It's another nice piece of habitat that today supports rare species but that soon might no longer be available to do that."

Lawmakers, too, have stepped into the fray, with proposals that would impose greater environmental safeguards on certain lands. Sen. Dianne Feinstein (D-Calif.), for example, has advocated legislation setting aside more than 600,000 acres of California desert habitat from solar-energy developers.

A measured approach

The debate over the Lucerne Valley project and others like it underscores just how difficult it is to find sites for commercial-scale renewable energy plants in the United States, where the Obama administration's green energy priorities are increasingly clashing with public lands protection objectives.

BLM is currently considering 66 solar project applications within the agency's California Desert District, which covers the sensitive Mojave region. If all were built, the projects would cover more than 554,000 acres and have a capacity to produce more than 46,000 megawatts of electricity -- enough to power roughly 35 million homes.

While Interior Secretary Ken Salazar has said that he wants federal land to be "an engine for the clean-energy economy," large wind farms, solar arrays and other renewable energy projects are drawing greater scrutiny from environmental groups due to their large footprints and hefty natural resource requirements. Some projects are almost certain to be held up by administrative appeals and lawsuits involving the Endangered Species Act, the Clean Water Act and the National Environmental Policy Act.

In this way, renewable projects may fare no better than the dozens of coal-fired power plants that have been challenged by environmentalists over the past decade, when the Bush administration advocated a significant expansion of fossil-based energy, including coal- and gas-fired generation. Most of the coal plant challenges involved concerns about air pollution, including emissions of carbon dioxide, the world's most abundant greenhouse gas.

The Obama team, while attempting to undo the Bush policies and set the nation on a course to reduced greenhouse gas emissions, now finds itself in a delicate position with environmental activists who strongly supported candidate Obama during last year's campaign and have remained mostly supportive over the president's first six months in office.

While most of the country's mainstream environmental groups support clean, renewable energy, they want it done sensibly and within certain land-use boundaries.

In a move toward careful environmental planning, Salazar last month designated more than 676,000 acres of public land in six Western states as "solar energy study areas" for the purpose of identifying lands that are best suited for solar-power projects (*Land Letter*, July 9). If fully developed, the solar energy zones could support as much as 100,000 megawatts of new generation -- enough to power hundreds of millions of homes, officials have said.

Beat the clock

Environmentalists hailed the study zone concept, saying it would help keep energy projects from destroying sensitive landscapes and wildlife habitat. But with deadlines looming for developers to qualify for stimulus money, many prospective projects are not waiting for the solar zone studies to be completed.

The proposed Lucerne Valley project, for example, lies outside the 351,049 acres that Salazar designated as solar study zones in California, said Razo, the BLM spokesman.

That worries advocacy groups, who say the Lucerne project and others like it should be reconfigured so its footprint falls within a part of the Mojave Desert deemed suitable for energy development.

"We've done enough preliminary analysis with some other environmental groups to know there are a number of potentially suitable locations [for solar power] in the California desert," said Jeff Aardahl, a biologist and California representative for Defenders of Wildlife in Sacramento.

Aardahl said his group wants to see the federal government giving priority to placing the solar-power projects on already disturbed land.

Unfortunately, he said, that is not being done.

"Many of the proposed projects we are seeing, at least in our minds, are located to a very large extent on undisturbed desert habitat that would be permanently converted into an industrial site," he said.

But Hanis, the solar industry group spokeswoman, said the siting and permitting activity triggered by the stimulus bill is working just the way it is supposed to by freeing up capital investment and spurring developers to seek out the most economically advantageous sites for new solar projects.

"With all these incentives, it becomes more interesting for the investors," Hanis said. "It's more of an incentive for investors to get into these kinds of projects rather than others."

Scott Streater is a freelance journalist based in Colorado Springs, Colo.

Appendix B
Emission Calculations for Construction Activities and Operation and Maintenance Activities

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Appendix B
Emission Calculations for Construction Activities
Lucerne Valley Solar Project

Table No.	Table Description
Table B1-a	Total Construction Emissions - Phase I
Table B1-b	Total Construction Emissions - Phase II
Table B2-a	Summary of Daily Construction Emissions - Phase I
Table B2-b	Summary of Daily Construction Emissions - Phase II
Table 3	Non-Road Diesel Equipment Exhaust Emission Factors
Table 4-A	Total Emissions for Diesel Non-Road Equipment - Phase I
Table 4-B	Total Emissions for Diesel Non-Road Equipment - Phase II
Table 5-A	Daily Emissions for Diesel Non-Road Equipment - Phase I
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Table 6	On-Road Vehicle Usage Phases I and II
Table 7	On-Road Vehicle Exhaust Emission Factors
Table 8-A	Total and Daily Exhaust Emissions for On Road Vehicles - Phase I
Table 8-B	Total and Daily Exhaust Emissions for On Road Vehicles - Phase II
Table 9-A	Fugitve Dust Emissions - Construction Site - Phase I
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Table 11-B	Fugitive Dust Emissions from Road (Site and Off-Site) - Phase II

Table B1-a

Total Construction Emissions - Phase I

Lucerne Valley Solar Project

Emission Type	Source	Emissions (tons)						GHG Emissions (metric tons)
		ROG	CO	NO$_x$	SO$_2$	PM$_{10}$	PM$_{2.5}$	CO$_2$e
Exhaust Emissions	Non Road Equipment	0.57	2.29	4.90	0.01	0.25	0.25	537
	On Road Vehicles	0.09	0.36	1.17	0.00	0.06	0.05	117
Fugitive Dust Emissions	Construction Activities	-	-	-	-	0.54	0.08	-
	Roads (Site and Off-Site)	-	-	-	-	5.80	0.64	-
Subtotal		**0.66**	**2.65**	**6.06**	**0.01**	**6.64**	**1.02**	**653**

Estimation for the first year (125 days of operations)

Emission Type	Source	Emissions (tons/year)					
		ROG	CO	NO$_x$	SO$_2$	PM$_{10}$	PM$_{2.5}$
Exhaust Emissions	Heavy Duty Diesel Truck	0.01	0.04	0.14	0.00	0.01	0.01
	ATVs	0.05	1.14	0.01	0.00	0.00	0.00
Fugitive Dust Emissions	Roads	-	-	-	-	1.31	0.13
Subtotal Operational Emissions First Year		**0.06**	**1.19**	**0.15**	**0.00**	**1.31**	**0.14**

Estimation for the first year (240 days of construction / 125 days of operations)	Emissions (tons/year)					
	ROG	CO	NO$_x$	SO$_2$	PM$_{10}$	PM$_{2.5}$
	0.72	3.84	6.22	0.01	7.96	1.16

Table B1-b

Total Construction Emissions - Phase II

Lucerne Valley Solar Project

Emission Type	Source	Emissions (tons)						GHG Emissions (metric tons)
		ROG	**CO**	**NO_x**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2e**
Exhaust Emissions	Non Road Equipment	0.57	2.29	4.90	0.01	0.25	0.25	537
	On Road Vehicles	0.09	0.36	1.17	0.001	0.06	0.05	117
Fugitive Dust Emissions	Construction Activities	-	-	-	-	0.74	0.08	-
	Roads (Site and Off-Site)	-	-	-	-	5.80	0.10	-
Subtotal		**0.66**	**2.65**	**6.06**	**0.01**	**6.84**	**0.48**	**653**

Estimation for the first year (125 days of operations)							
		Emissions					
		(tons/year)					
Emission Type	Source	ROG	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$
Exhaust Emissions	Heavy Duty Diesel Truck	0.01	0.04	0.14	0.0002	0.01	0.01
	ATVs	0.05	1.14	0.01	0.001	0.002	0.002
Fugitive Dust Emissions	Roads	-	-	-	-	1.31	0.13
Subtotal first yeat of operations		0.06	1.19	0.15	0.001	1.31	0.14

0.72 3.84 6.22 0.01 8.15 0.62

Table B2-a
Summary of Daily Construction Emissions - Phase I
Lucerne Valley Solar Project

Emission Type	Source	Emissions (lbs/day)							
		ROG	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2	CH_4
Exhaust Emissions	Non Road Equipment	7.8	30.2	63.0	0.1	3.5	3.5	6,886	0.7
	On Road Vehicles	0.8	3.0	9.7	0.01	0.5	0.4	1,070	0.04
Fugitive Dust Emissions	Construction Activities	-	-	-	-	43	6	-	-
	Roads (Site and Off-Site)	-	-	-	-	48	5	-	-
Subtotal		**9**	**33**	**73**	**0.1**	**95**	**15**	**7,957**	**1**

Table B2-b

Summary of Daily Construction Emissions - Phase II

Lucerne Valley Solar Project

Emission Type	Source	Emissions (lbs/day)							
		ROG	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2	CH_4
Exhaust Emissions	Non Road Equipment	7.8	30.2	63.0	0.1	3.5	3.5	6,886	0.7
	On Road Vehicles	0.8	3.0	9.7	0.01	0.5	0.4	1,070	0.04
Fugitive Dust Emissions	Construction Activities	-	-	-	-	58	8	-	-
	Roads (Site and Off-Site)	-	-	-	-	48	5	-	-
Subtotal		**9**	**33**	**73**	**0.1**	**110**	**17**	**7,957**	**1**

Table B3
Non-Road Diesel Equipment Exhaust Emission Factors
Lucerne Valley Solar Project

Equipment	Maximum Operating Range (hp)	Composite Emission Factor (lb/hr)						
		ROG	CO	NO_x	SO_2	PM	CO_2	CH_4
Vibratory Post Driver / Drill Rig	Composite	0.1052	0.5146	1.1331	0.0017	0.0498	165	0.0095
Crawler Tractors	Composite	0.1861	0.6409	1.3854	0.0013	0.0854	114	0.0168
Excavators	Composite	0.1483	0.5581	1.1502	0.0013	0.0638	120	0.0134
Forklifts	Composite	0.0686	0.2319	0.5161	0.0006	0.0281	54.4	0.0062
Generator Set	15	0.0172	0.0726	0.1154	0.0002	0.0069	10.2	0.0016
Graders	Composite	0.1723	0.6314	1.4338	0.0015	0.0753	133	0.0155
Rollers	Composite	0.1176	0.4212	0.7749	0.0008	0.0547	67.1	0.0106
Scrapers	Composite	0.3202	1.2424	2.9078	0.0027	0.1256	262	0.0289
Tractors/Loaders/Backhoes	Composite	0.1021	0.3930	0.6747	0.0008	0.0521	66.8	0.0092
Plate Compactor	Composite	0.0050	0.0263	0.0317	0.0001	0.0015	4.3	0.0005

Source: South Coast Air Quality Management District (SCAQMD). 2008. Off-road Mobile Source Emission Factors (Scenario Years 2007 – 2025).

Notes:

Composite emission factors have horsepower rating and load factors already built into the emission factors. SCAQMD recommends using composite factors if the CEQA practitioner does not know these two parameters when calculating off-road mobile source emissions

Table 4-A
Total Emissions for Diesel Non-Road Equipment - Phase I
Lucerne Valley Solar Project

Construction Phase	Equipment Type	Equipment Engine Size (hp) [a]	Fuel Type	Total Hourly Usage for All Units (hrs)	Criteria PollutantsTotal Emissions (tons)					GHG Total Emissions (metric tons)		
					ROG	CO	NO_x	SO_2	PM	CO_2	CH_4	CO_2e
All Construction Activities	Vibratory Post Driver	100-175	Diesel	4,050	0.213	1.042	2.295	0.004	0.101	302.8	0.0	303.2
	Crawler Tractors/Dozer	100-175	Diesel	500	0.047	0.160	0.346	0.000	0.021	25.9	0.0	25.9
	Excavators	175-300	Diesel	200	0.015	0.056	0.115	0.000	0.006	10.8	0.0	10.9
	Forklifts/Aerial Lifts/ Booms	50-100	Diesel	6,000	0.206	0.696	1.548	0.002	0.084	148.0	0.0	148.4
	Generator/Compressor	5-15	Diesel	4,000	0.034	0.145	0.231	0.000	0.014	18.5	0.0	18.6
	Graders	175-300	Diesel	80	0.007	0.025	0.057	0.000	0.003	4.8	0.0	4.8
	Rollers/Compactors	100-175	Diesel	500	0.029	0.105	0.194	0.000	0.014	15.2	0.0	15.3
	Scrapers	175-300	Diesel	40	0.006	0.025	0.058	0.000	0.003	4.8	0.0	4.8
	Tractors/Loaders/Backhoes	100-175	Diesel	160	0.008	0.031	0.054	0.000	0.004	4.8	0.0	4.9
	Vibratory Plate (hand held)	10 -- 15	Diesel	40	0.000	0.001	0.001	0.000	0.000	0.1	0.0	0.1
	TOTAL				**0.566**	**2.286**	**4.899**	**0.006**	**0.250**	**536**	**0.046**	**537**

Notes:

(a) Composite emission factors recommended by the South Coast Air Management District were used per equipment, except for Generator/Compressor (maximum hp 15).

Table 4-B
Total Emissions for Diesel Non-Road Equipment - Phase II
Lucerne Valley Solar Project

Construction Phase	Equipment Type	Equipment Engine Size (hp) [a]	Fuel Type	Total Hourly Usage for All Units (hrs)	Criteria PollutantsTotal Emissions (tons)					GHG Total Emissions (metric tons)		
					ROG	CO	NO_x	SO_2	PM	CO_2	CH_4	CO_2e
All Construction Activities	Vibratory Post Driver	100-175	Diesel	4,050	0.213	1.042	2.295	0.004	0.101	303	0.0	303
	Crawler Tractors/Dozer	100-175	Diesel	500	0.047	0.160	0.346	0.000	0.021	26	0.0	26
	Excavators	175-300	Diesel	200	0.015	0.056	0.115	0.000	0.006	11	0.0	11
	Forklifts/Aerial Lifts/ Booms	50-100	Diesel	6,000	0.206	0.696	1.548	0.002	0.084	148	0.0	148
	Generator/Compressor	5 -- 15	Diesel	4,000	0.034	0.145	0.231	0.000	0.014	19	0.0	19
	Graders	175-300	Diesel	80	0.007	0.025	0.057	0.000	0.003	5	0.0	5
	Rollers/Compactors	100-175	Diesel	500	0.029	0.105	0.194	0.000	0.014	15	0.0	15
	Scrapers	175-300	Diesel	40	0.006	0.025	0.058	0.000	0.003	5	0.0	5
	Tractors/Loaders/Backhoes	100-175	Diesel	160	0.008	0.031	0.054	0.000	0.004	5	0.0	5
	Vibratory Plate (hand held)	10-15	Diesel	40	0.000	0.001	0.001	0.000	0.000	0	0.0	0
	TOTAL				**0.57**	**2.29**	**4.90**	**0.01**	**0.25**	**536**	**0.046**	**537**

Notes:

(a) Composite emission factors recommended by the South Coast Air Management District were used per equipment, except for Generator/Compressor (maximum hp 15).

Table 5-A
Daily Emissions for Diesel Non-Road Equipment - Phase I
Lucerne Valley Solar Project

Construction Phase	Equipment Type	Equipment Engine Size (hp) [a]	Fuel Type	Total Hourly Usage for All Units (hrs)	Estimated daily usage [b] (hrs/day)	Criteria PollutantsTotal Emissions (lbs/day)					GHG Total Emissions (lbs/day)	
						ROG	CO	NO_x	SO_2	PM	CO_2	CH_4
All Construction Activities	Vibratory Post Driver	100-175	Diesel	4,050	17	1.776	8.684	19.122	0.029	0.841	2782	0.160
	Crawler Tractors/Dozer	100-175	Diesel	500	2	0.388	1.335	2.886	0.003	0.178	238	0.035
	Excavators	175-300	Diesel	200	1	0.124	0.465	0.958	0.001	0.053	100	0.011
	Forklifts/Aerial Lifts/ Booms	50-100	Diesel	6,000	25	1.714	5.798	12.902	0.015	0.702	1360	0.155
	Generator/Compressor	5 -- 15	Diesel	4,000	17	0.287	1.209	1.923	0.003	0.115	170	0.026
	Graders	175-300	Diesel	80	3	0.551	2.020	4.588	0.005	0.241	425	0.050
	Rollers/Compactors	100-175	Diesel	500	20	2.353	8.424	15.497	0.015	1.094	1341	0.212
	Scrapers	175-300	Diesel	40	2	0.512	1.988	4.653	0.004	0.201	420	0.046
	Tractors/Loaders/Backhoes	100-175	Diesel	160	1	0.068	0.262	0.450	0.001	0.035	45	0.006
	Vibratory Plate (hand held)	10 -- 15	Diesel	40	2	0.008	0.042	0.051	0.000	0.002	7	0.001
	TOTAL					7.8	30.2	63.0	0.1	3.5	6,886	0.702

Notes:

(a) Composite emission factors recommended by the South Coast Air Management District were used per equipment, except for Generator/Compressor (maximum hp 15).

(b) Daily usage is estimated per a composite number of equipment and based on a 240 days of total construction period.

Exception on daily usage assumption includes graders, scrapers, vibratory plates and roller/compactors, since the grading activities are intended to have a 25-day duration.

Table 5-B
Daily Emissions for Diesel Non-Road Equipment - Phase II
Lucerne Valley Solar Project

Construction Phase	Equipment Type	Equipment Engine Size (hp) [a]	Fuel Type	Total Hourly Usage for All Units (hrs)	Estimated daily usage [b] (hrs/day)	Criteria PollutantsTotal Emissions (lbs/day)					GHG Total Emissions (lbs/day)	
						ROG	CO	NO_x	SO_2	PM	CO_2	CH_4
All Construction Activities	Vibratory Post Driver	100-175	Diesel	4,050	17	1.776	8.684	19.122	0.029	0.841	2781.90	0.160
	Crawler Tractors/Dozer	100-175	Diesel	500	2	0.388	1.335	2.886	0.003	0.178	237.54	0.035
	Excavators	175-300	Diesel	200	1	0.124	0.465	0.958	0.001	0.053	99.65	0.011
	Forklifts/Aerial Lifts/ Booms	50-100	Diesel	6,000	25	1.714	5.798	12.902	0.015	0.702	1359.89	0.155
	Generator/Compressor	5-15	Diesel	4,000	17	0.287	1.209	1.923	0.003	0.115	170.13	0.026
	Graders	175-300	Diesel	80	3	0.551	2.020	4.588	0.005	0.241	424.78	0.050
	Rollers/Compactors	100-175	Diesel	500	20	2.353	8.424	15.497	0.015	1.094	1341.05	0.212
	Scrapers	175-300	Diesel	40	2	0.512	1.988	4.653	0.004	0.201	419.998	0.046
	Tractors/Loaders/Backhoes	100-175	Diesel	160	1	0.068	0.262	0.450	0.001	0.035	44.54	0.006
	Vibratory Plate (hand held)	10-15	Diesel	40	2	0.008	0.042	0.051	0.000	0.002	6.902	0.001
	TOTAL					**7.8**	**30.2**	**63.0**	**0.1**	**3.5**	**6,886**	**0.702**

Notes: Construction of Phase II is assumed to have the same duration and equipment/vehicle list as Phase I

(a) Composite emission factors recommended by the South Coast Air Management District were used per equipment, except for Generator/Compressor (maximum hp 15).

(b) Daily usage is estimated per a composite number of equipment and based on a 240 days of total construction period, except for gradind equipment (25 days).

Exception on daily usage assumption includes graders, scrapers, vibratory plates and roller/compactors.

Table 6

On-Road Vehicle Usage Phases I and II

Lucerne Valley Solar Project

Per

Phase I

Vehicle Type	Construction Phase	Vehicle Description	Vehicle Class	Total Working Hours	Total Working Days	Working hours per day	Estimated speed (mph)	Total Daily VMT All Units (VMT/day)			Total Overall VMT of All Units (VMT)		
								Unpaved Roads	Paved Roads	TOTAL	Unpaved Roads	Paved Roads	TOTAL
Heavy Duty Diesel Truck	All	Dump Truck	HDDV6	120	240	0.5	25	2.5	10	13	600	2,400	3,000
		Concrete Truck	HDDV6	120	240	0.5	25	2.5	10	13	600	2,400	3,000
		Tender Truck	HDDV6	120	240	0.5	25	2.5	10	13	600	2,400	3,000
		Highway Tractor	HDDV6	80	240	0.3	25	1.7	7	8	400	1,600	2,000
		Flatbed Truck	HDDV3	1000	240	4.2	25	20.8	83	104	5,000	20,000	25,000
		Water Truck	HDDV6	1000	240	4.2	25	20.8	83	104	5,000	20,000	25,000
	Subtotal	-		-	-	-	-	**51**	**203**	**254**	**12,200**	**48,800**	**61,000**

Phase II

Vehicle Type	Construction Phase	Vehicle Description	Vehicle Class	Total Working Hours	Total Working Days	Working hours per day	Estimated speed (mph)	Total Daily VMT All Units (VMT/day)			Total Overall VMT of All Units (VMT)		
								Unpaved Roads	Paved Roads	TOTAL	Unpaved Roads	Paved Roads	TOTAL
Heavy Duty Diesel Truck	All	Dump Truck	HDDV6	120	240	0.5	25	2.5	10	13	600	2,400	3,000
		Concrete Truck	HDDV6	120	240	0.5	25	2.5	10	13	600	2,400	3,000
		Tender Truck	HDDV6	120	240	0.5	25	2.5	10	13	600	2,400	3,000
		Highway Tractor	HDDV6	80	240	0.3	25	1.7	7	8	400	1,600	2,000
		Flatbed Truck	HDDV3	1000	240	4.2	25	20.8	83	104	5,000	20,000	25,000
		Water Truck	HDDV6	1000	240	4.2	25	20.8	83	104	5,000	20,000	25,000
	Subtotal	-		-	-	-	-	**51**	**203**	**254**	**12,200**	**48,800**	**61,000**

Notes: Construction of Phase II is assumed to have the same duration and equipment/vehicle list as Phase I

Table 7

On-Road Vehicle Exhaust Emission Factors

Lucerne Valley Solar Project

Equipment Type	Emission Factor[a] (pounds/VMT)							
	ROG	CO	NOx	SOx	PM10	PM2.5	CO2	CH_4
Heavy Duty Diesel Trucks	0.003042	0.011955	0.038221	0.000041	0.001831	0.001601	4.211206	0.000142
Light Duty Trucks	0.002590	0.01844	0.02062	0.0000270	0.0007512	0.0006243	2.732	0.0001258
Gasoline Passenger Vehicles	0.0009140	0.00826	0.0009181	0.00001077	0.00008698	0.00005478	1.096	0.00008146
ATVs	0.0046270	0.10146	0.0009048	0.00010582	0.00014550	0.00014550	0.517	0.00000000

Notes:

a. Emission Factors for On-Road Heavy-Heavy-Duty Diesel Trucks. SCAQMD (Scenario Year: 2010).

Table 8-A
Total and Daily Exhaust Emissions for On Road Vehicles - Phase I
Lucerne Valley Solar Project

Total Emissions

Vehicle Type	Total Overall Miles Travelled (VMT)	Total Emissions (tons)						Total Emissions (metric tons)	
		ROG	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2	CH_4
Heavy Duty Diesel Trucks	61,000	0.09	0.36	1.17	0.00	0.06	0.05	117	0
Total	-	**0.09**	**0.36**	**1.17**	**0.00**	**0.06**	**0.05**	**117**	**0**

Daily Emissions

Vehicle Type	Total Overall Miles Travelled (VMT)	Total Emissions (lbs/day)							
		ROG	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2	CH_4
Heavy Duty Diesel Trucks	61,000	1	3	10	0.01	0.5	0.4	1070	0.04
Total	-	**1**	**3**	**10**	**0.01**	**0.5**	**0.4**	**1070**	**0.04**

Table 8-B
Total and Daily Exhaust Emissions for On Road Vehicles - Phase II
Lucerne Valley Solar Project

Total Emissions

Vehicle Type	Total Overall Miles Travelled (VMT)	Total Emissions (tons)						Total Emissions (metric tons)	
		ROG	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2	CH_4
Heavy Duty Diesel Trucks	61,000	0.09	0.36	1.17	0.00	0.06	0.05	117	0
Total	**-**	**0.09**	**0.36**	**1.17**	**0.00**	**0.06**	**0.05**	**117**	**0**

Daily Emissions

Vehicle Type	Total Overall Miles Travelled (VMT)	Total Emissions (lbs/day)							
		ROG	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2	CH_4
Heavy Duty Diesel Trucks	61,000	1	3	10	0	0	0	1070	0
Total	**-**	**1**	**3**	**10**	**0**	**0**	**0**	**1070**	**0**

Notes: Construction of Phase II is assumed to have the same duration and equipment/vehicle list as Phase I

Table 9-A
Fugitve Dust Emissions - Construction Site - Phase I

Construction Activity	Average Daily Disturbance (acres)	Duration of Activity (months)	Emission Factor[a] (ton/acre/month)		Emissions (tons)		Daily Emissions (lbs/day)	
			PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
Site Clearing and Grading	7.2	0.83	0.090	0.0126	0.54	0.08	43	6
Access Roads	1.4	0.17	0.090	0.0126	0.02	0.00	8.4	1.2
Switchyard	0.0006	0.17	0.090	0.0126	0.00	0.00	0.0	0.0
Underground Power Line	0.1667	1	0.090	0.0126	0.02	0.00	1.0	0.1
Control/Maintenance Building	0.0001	4	0.090	0.0126	0.00	0.00	0.00	0.00
Parking / Laydown Area	0.1	0.17	0.090	0.0126	0.00	0.00	0.00	0.00
Total	-	-	-	-	**0.58**	**0.08**	**53**	**7**

Notes:

a. See emission factor derivation table below.

b. Total site area for Phase I: 516 acres. Total duration of grading: 25 days.

Emission Factor Derivation Table

Parameter	Units	TSP[1]	PM_{10}[(2)]	$PM_{2.5}$[(3)]
Uncontrolled Emission Factor[1] (based on 30 days/month)	ton/acre/month	0.2	0.15	0.021
Controlled Emission Factor[5] (based on 24 days/month)	ton/acre/month	0.12	0.090	0.0126

Notes:

1. Emission factor from AP-42 Section 13.2.3 for TSP.
2. PM_{10} emission factor calculated by multiplying TSP emission factor by 0.75 (AP-42 Section 11.9, Table 11.9-1)
3. $PM_{2.5}$ emission factor calculated by multiplying TSP emission factor by 0.105 (AP-42 Section 11.9, Table 11.9-1)
4. Calculated by multiplying 30-day emission factor by 0.8 (24 days/ 30 days).
4. Assume dust 40% duct control factor based on as-needed watering. Does not include any control for winter conditions.

Table 9-B
Fugitve Dust Emissions - Construction Site - Phase II

Construction Activity	Average Daily Disturbance (acres)	Duration of Activity (months)	Emission Factor[a] (ton/acre/month)		Emissions (tons)		Daily Emissions (lbs/day)	
			PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
Site Clearing and Grading	9.6	0.83	0.090	0.0126	0.72	0.10	58	8
Switchyard	0.0006	0.17	0.090	0.0126	0.00	0.00	0.0	0.0
Underground Power Line	0.1667	1	0.090	0.0126	0.02	0.00	1.0	0.1
Parking / Laydown Area	0.1	0.17	0.090	0.0126	0.00	0.00	0.00	0.00
Total	-	-	-	-	**0.74**	**0.10**	**59**	**8**

Notes:

a. See emission factor derivation table below.

b. Total solar array area for Phase II: 140 acres (Per POD description). Total duration of grading: 25 days.

Emission Factor Derivation Table

Parameter	Units	TSP[1]	PM_{10}[(2)]	$PM_{2.5}$[(3)]
Uncontrolled Emission Factor[1] (based on 30 days/month)	ton/acre/month	0.2	0.15	0.021
Controlled Emission Factor[5] (based on 24 days/month)	ton/acre/month	0.12	0.090	0.0126

Notes:

1. Emission factor from AP-42 Section 13.2.3 for TSP.
2. PM_{10} emission factor calculated by multiplying TSP emission factor by 0.75 (AP-42 Section 11.9, Table 11.9-1)
3. $PM_{2.5}$ emission factor calculated by multiplying TSP emission factor by 0.105 (AP-42 Section 11.9, Table 11.9-1)
4. Calculated by multiplying 30-day emission factor by 0.8 (24 days/ 30 days).
4. Assume dust 40% duct control factor based on as-needed watering. Does not include any control for winter conditions (frozen ground)

Table 10
Fugitive Dust Emission Factors - Roads

Unpaved Roads - Emission Factor Derivation

$E = k(s/12)^a(W/3)^b$ AP-42 Section 13.2.2 (11/06 version)

where:

E = particulate emission factor (lb/VMT)
k, a, b = empirical constants for industrial roads
s = surface material silt content (%)
W = average vehicle weight (tons)

Parameter	Units	PM_{10}	$PM_{2.5}$	Reference
Mean Vehicle Weight	**tons**	12	12	Assumption
Constant, k	lb/VMT	1.5	0.15	Table 13.2.2-2 (worst case)
Constant, a		0.9	0.9	Table 13.2.2-2 (worst case)
Constant, b		0.45	0.45	Table 13.2.2-2 (worst case)
Silt content, s	%	8.5	8.5	Table 13.2..2-1 (construction sites)
Uncontrolled Emission factor, E	**lb/VMT**	**2.05**	**0.205**	**Calculation**
Control Efficiency for Watering	%	0.65	0.65	Assumption
Controlled Emission factor, E	**lb/VMT**	**0.72**	**0.072**	**Calculation**

Paved Roads - Emission Factor Derivation Table

$E = (k(sL/2)^{0.65}(W/3)^{1.5}-C)$ AP-42 Section 13.2.1 (11/06 version)

where:

E = particulate emission factor (lb/VMT)
k = particle size multiplier
sL = road surface silt loading (g/m²)
W = average vehicle weight (tons)
C = emission factor for 1980's vehicle fleet exhaust, break wear and tire wear

Parameter	Units	PM_{10}	$PM_{2.5}$	Reference
Mean Vehicle Weight	tons	12	12	Assumption
k factor	lb/VMT	0.016	0.0024	Table 13.2-1.1
Silt Loading, sL	g/m^2	0.6	0.6	Table 13.2.1-3
Emission factor, C	lb/VMT	0.00047	0.00036	Table 13.2.1-2
Uncontrolled Emission factor, E	**lb/VMT**	**0.05805**	**0.008419**	**Calculation**

Table 11-A
Fugitive Dust Emissions from Road (Site and Off-Site) - Phase I

Total Emissions

			Emissions (tons)					
	Total Overall VMT (VMT)		Unpaved Roads		Paved Roads		All Roads	
Fuel Type	Paved Roads	Unpaved Roads	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
Heavy Duty Diesel Trucks	12,200	48,800	4.382	0.438	1.42	0.205	5.80	0.644
Total	-	-	**4.4**	**0.4**	**1.4**	**0.21**	**5.8**	**0.64**

Daily Emissions

			Emissions (lbs/day)					
	Total Overall VMT (VMT)		Unpaved Roads		Paved Roads		All Roads	
Fuel Type	Paved Roads	Unpaved Roads	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
Heavy Duty Diesel Trucks	12,200	48,800	36.5	3.7	11.8	1.7	48.3	5.4
Total	-	-	**36.7**	**3.7**	**11.9**	**1.7**	**48.5**	**5.4**

Table 11-B
Fugitive Dust Emissions from Road (Site and Off-Site) - Phase II

Total Emissions

	Total Overall VMT (VMT)		Emissions (tons)					
			Unpaved Roads		Paved Roads		All Roads	
Fuel Type	**Paved Roads**	**Unpaved Roads**	**PM_{10}**	**$PM_{2.5}$**	**PM_{10}**	**$PM_{2.5}$**	**PM_{10}**	**$PM_{2.5}$**
Heavy Duty Diesel Trucks	12,200	48,800	4.382	0.438	1.42	0.205	5.80	0.644
Total	-	-	**4.4**	**0.4**	**1.4**	**0.21**	**5.8**	**0.64**

Daily Emissions

	Total Overall VMT (VMT)		Emissions (lbs/day)					
			Unpaved Roads		Paved Roads		All Roads	
Fuel Type	**Paved Roads**	**Unpaved Roads**	**PM_{10}**	**$PM_{2.5}$**	**PM_{10}**	**$PM_{2.5}$**	**PM_{10}**	**$PM_{2.5}$**
Heavy Duty Diesel Trucks	12,200	48,800	36.5	3.7	11.8	1.7	48.3	5.4
Total	-	-	**36.7**	**3.7**	**11.9**	**1.7**	**48.5**	**5.4**

SCAB Fleet Average Emission Factors (Diesel)

EF-OFFROAD

Air Basin	SC

		(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
Equipment	**MaxHP**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**CO2**	**CH4**
Aerial Lifts	15	0.0104	0.0529	0.0662	0.0001	0.0037	8.7	0.0009
	25	0.0210	0.0577	0.1013	0.0001	0.0065	11.0	0.0019
	50	0.0756	0.1937	0.1984	0.0003	0.0189	19.6	0.0068
	120	0.0702	0.2501	0.4502	0.0004	0.0361	38.1	0.0063
	500	0.1506	0.5801	1.9198	0.0021	0.0598	213	0.0136
	750	0.2803	1.0486	3.5605	0.0039	0.1096	385	0.0253
Aerial Lifts Composite		0.0670	0.2093	0.3600	0.0004	0.0248	34.7	0.0060
Air Compressors	15	0.0144	0.0513	0.0838	0.0001	0.0061	7.2	0.0013
	25	0.0325	0.0847	0.1397	0.0002	0.0098	14.4	0.0029
	50	0.1163	0.2813	0.2386	0.0003	0.0265	22.3	0.0105
	120	0.1014	0.3351	0.5977	0.0006	0.0545	47.0	0.0091
	175	0.1274	0.5113	1.0082	0.0010	0.0568	88.5	0.0115
	250	0.1225	0.3413	1.3983	0.0015	0.0462	131	0.0111
	500	0.1943	0.6778	2.2062	0.0023	0.0752	232	0.0175
	750	0.3054	1.0476	3.5002	0.0036	0.1179	358	0.0276
	1000	0.5203	1.8591	6.0195	0.0049	0.1809	486	0.0469
Air Compressors Composite		0.1120	0.3613	0.7320	0.0007	0.0526	63.6	0.0101
Bore/Drill Rigs	15	0.0120	0.0632	0.0754	0.0002	0.0031	10.3	0.0011
	25	0.0196	0.0660	0.1257	0.0002	0.0065	16.0	0.0018
	50	0.0545	0.2505	0.2820	0.0004	0.0194	31.0	0.0049
	120	0.0722	0.4812	0.6155	0.0009	0.0456	77.1	0.0065
	175	0.0930	0.7543	0.9148	0.0016	0.0481	141	0.0084
	250	0.0957	0.3460	1.1847	0.0021	0.0384	188	0.0086
	500	0.1488	0.5566	1.7054	0.0031	0.0614	311	0.0134
	750	0.2996	1.0997	3.4821	0.0062	0.1231	615	0.0270
	1000	0.5360	1.7074	8.3092	0.0093	0.2078	928	0.0484
Bore/Drill Rigs Composite		0.1052	0.5146	1.1331	0.0017	0.0498	165	0.0095
Cement and Mortar Mixers	15	0.0079	0.0388	0.0505	0.0001	0.0029	6.3	0.0007
	25	0.0346	0.0942	0.1633	0.0002	0.0107	17.6	0.0031
Cement and Mortar Mixers Composite		0.0101	0.0434	0.0599	0.0001	0.0035	7.2	0.0009
Concrete/Industrial Saws	25	0.0200	0.0678	0.1279	0.0002	0.0063	16.5	0.0018
	50	0.1231	0.3210	0.3070	0.0004	0.0301	30.2	0.0111
	120	0.1342	0.4976	0.8601	0.0009	0.0719	74.1	0.0121
	175	0.1927	0.8786	1.6459	0.0018	0.0864	160	0.0174
Concrete/Industrial Saws Composite		0.1270	0.4273	0.6566	0.0007	0.0552	58.5	0.0115
Cranes	50	0.1284	0.3166	0.2547	0.0003	0.0289	23.2	0.0116
	120	0.1117	0.3723	0.6542	0.0006	0.0602	50.1	0.0101
	175	0.1211	0.4880	0.9302	0.0009	0.0538	80.3	0.0109
	250	0.1243	0.3464	1.2372	0.0013	0.0470	112	0.0112
	500	0.1821	0.6625	1.7722	0.0018	0.0685	180	0.0164
	750	0.3082	1.1113	3.0564	0.0030	0.1166	303	0.0278
	9999	1.0894	4.1317	12.1879	0.0098	0.3792	971	0.0983
Cranes Composite		0.1594	0.5431	1.4515	0.0014	0.0642	129	0.0144
Crawler Tractors	50	0.1446	0.3520	0.2780	0.0003	0.0320	24.9	0.0131
	120	0.1551	0.5018	0.9038	0.0008	0.0819	65.8	0.0140
	175	0.1941	0.7597	1.4788	0.0014	0.0856	121	0.0175
	250	0.2051	0.5743	1.9440	0.0019	0.0784	166	0.0185

SCAB Fleet Average Emission Factors (Diesel)

EF-OFFROAD

Air Basin	SC

		(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
Equipment	MaxHP	ROG	CO	NOX	SOX	PM	CO2	CH4
	500	0.2913	1.1931	2.7255	0.0025	0.1101	259	0.0263
	750	0.5240	2.1290	4.9881	0.0047	0.1989	465	0.0473
	1000	0.7980	3.3726	8.5998	0.0066	0.2810	658	0.0720
Crawler Tractors Composite		0.1861	0.6409	1.3854	0.0013	0.0854	114	0.0168
Crushing/Proc. Equipment	50	0.2271	0.5592	0.4700	0.0006	0.0520	44.0	0.0205
	120	0.1760	0.5956	1.0382	0.0010	0.0960	83.1	0.0159
	175	0.2367	0.9736	1.8607	0.0019	0.1068	167	0.0214
	250	0.2243	0.6225	2.5465	0.0028	0.0841	245	0.0202
	500	0.3091	1.0542	3.4510	0.0037	0.1187	374	0.0279
	750	0.4956	1.6226	5.6506	0.0059	0.1900	589	0.0447
	9999	1.3820	4.8014	16.0752	0.0131	0.4812	1,308	0.1247
Crushing/Proc. Equipment Composite		0.2152	0.7260	1.4394	0.0015	0.0935	132	0.0194
Dumpers/Tenders	25	0.0108	0.0336	0.0645	0.0001	0.0036	7.6	0.0010
Dumpers/Tenders Composite		0.0108	0.0336	0.0645	0.0001	0.0036	7.6	0.0010
Excavators	25	0.0199	0.0677	0.1261	0.0002	0.0057	16.4	0.0018
	50	0.1131	0.3145	0.2638	0.0003	0.0276	25.0	0.0102
	120	0.1398	0.5318	0.8402	0.0009	0.0781	73.6	0.0126
	175	0.1465	0.6701	1.1143	0.0013	0.0663	112	0.0132
	250	0.1451	0.3934	1.4935	0.0018	0.0519	159	0.0131
	500	0.1984	0.6161	1.9285	0.0023	0.0711	234	0.0179
	750	0.3313	1.0196	3.3023	0.0039	0.1198	387	0.0299
Excavators Composite		0.1483	0.5581	1.1502	0.0013	0.0638	120	0.0134
Forklifts	50	0.0666	0.1824	0.1530	0.0002	0.0163	14.7	0.0060
	120	0.0601	0.2243	0.3497	0.0004	0.0342	31.2	0.0054
	175	0.0738	0.3306	0.5540	0.0006	0.0337	56.1	0.0067
	250	0.0652	0.1707	0.7163	0.0009	0.0227	77.1	0.0059
	500	0.0868	0.2343	0.8909	0.0011	0.0307	111	0.0078
Forklifts Composite		0.0686	0.2319	0.5161	0.0006	0.0281	54.4	0.0062
Generator Sets	15	0.0172	0.0726	0.1154	0.0002	0.0069	10.2	0.0016
	25	0.0300	0.1033	0.1705	0.0002	0.0107	17.6	0.0027
	50	0.1117	0.2904	0.3070	0.0004	0.0284	30.6	0.0101
	120	0.1395	0.5054	0.9075	0.0009	0.0714	77.9	0.0126
	175	0.1672	0.7471	1.4780	0.0016	0.0721	142	0.0151
	250	0.1618	0.5018	2.0720	0.0024	0.0618	213	0.0146
	500	0.2305	0.8858	2.9974	0.0033	0.0917	337	0.0208
	750	0.3838	1.4300	4.9646	0.0055	0.1502	544	0.0346
	9999	1.0080	3.6008	12.1384	0.0105	0.3600	1,049	0.0909
Generator Sets Composite		0.0961	0.3293	0.6440	0.0007	0.0396	61.0	0.0087
Graders	50	0.1400	0.3584	0.2961	0.0004	0.0323	27.5	0.0126
	120	0.1553	0.5459	0.9268	0.0009	0.0849	75.0	0.0140
	175	0.1743	0.7409	1.3532	0.0014	0.0783	124	0.0157
	250	0.1761	0.4934	1.7904	0.0019	0.0662	172	0.0159
	500	0.2149	0.7523	2.1198	0.0023	0.0807	229	0.0194
	750	0.4580	1.5877	4.6098	0.0049	0.1729	486	0.0413
Graders Composite		0.1723	0.6314	1.4338	0.0015	0.0753	133	0.0155
Off-Highway Tractors	120	0.2457	0.7439	1.4200	0.0011	0.1255	93.7	0.0222
	175	0.2326	0.8561	1.7665	0.0015	0.1014	130	0.0210

SCAB Fleet Average Emission Factors (Diesel)

EF-OFFROAD

Air Basin	SC

		(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
Equipment	**MaxHP**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**CO2**	**CH4**
	250	0.1881	0.5347	1.7050	0.0015	0.0735	130	0.0170
	750	0.7400	3.5496	6.8440	0.0057	0.2854	568	0.0668
	1000	1.1197	5.5155	11.4633	0.0082	0.4009	814	0.1010
Off-Highway Tractors Composite		0.2368	0.8385	1.9897	0.0017	0.0974	151	0.0214
Off-Highway Trucks	175	0.1732	0.7625	1.2796	0.0014	0.0771	125	0.0156
	250	0.1639	0.4301	1.6150	0.0019	0.0574	167	0.0148
	500	0.2492	0.7542	2.3188	0.0027	0.0872	272	0.0225
	750	0.4069	1.2210	3.8814	0.0044	0.1436	442	0.0367
	1000	0.6440	2.0615	7.3260	0.0063	0.2219	625	0.0581
Off-Highway Trucks Composite		0.2480	0.7429	2.3885	0.0027	0.0875	260	0.0224
Other Construction Equipment	15	0.0118	0.0617	0.0737	0.0002	0.0030	10.1	0.0011
	25	0.0162	0.0545	0.1039	0.0002	0.0053	13.2	0.0015
	50	0.1033	0.2930	0.2787	0.0004	0.0263	28.0	0.0093
	120	0.1320	0.5419	0.8649	0.0009	0.0740	80.9	0.0119
	175	0.1168	0.5901	0.9927	0.0012	0.0543	107	0.0105
	500	0.1705	0.6068	1.9821	0.0025	0.0678	254	0.0154
Other Construction Equipment Composite		0.1056	0.4108	1.0117	0.0013	0.0442	123	0.0095
Other General Industrial Equipmen	15	0.0066	0.0391	0.0466	0.0001	0.0017	6.4	0.0006
	25	0.0186	0.0632	0.1177	0.0002	0.0054	15.3	0.0017
	50	0.1281	0.3073	0.2413	0.0003	0.0285	21.7	0.0116
	120	0.1459	0.4647	0.8218	0.0007	0.0795	62.0	0.0132
	175	0.1516	0.5816	1.1364	0.0011	0.0676	95.9	0.0137
	250	0.1400	0.3676	1.5016	0.0015	0.0509	136	0.0126
	500	0.2500	0.8031	2.6018	0.0026	0.0919	265	0.0226
	750	0.4153	1.3236	4.4083	0.0044	0.1538	437	0.0375
	1000	0.6374	2.2063	7.1530	0.0056	0.2212	560	0.0575
Other General Industrial Equipmen Composite		0.1847	0.5948	1.6649	0.0016	0.0740	152	0.0167
Other Material Handling Equipmen	50	0.1773	0.4246	0.3355	0.0004	0.0395	30.3	0.0160
	120	0.1417	0.4524	0.8014	0.0007	0.0772	60.7	0.0128
	175	0.1914	0.7367	1.4429	0.0014	0.0856	122	0.0173
	250	0.1481	0.3917	1.6024	0.0016	0.0542	145	0.0134
	500	0.1782	0.5784	1.8750	0.0019	0.0660	192	0.0161
	9999	0.8390	2.9174	9.4509	0.0073	0.2912	741	0.0757
Other Material Handling Equipment Composite		0.1773	0.5556	1.6150	0.0015	0.0715	141	0.0160
Pavers	25	0.0278	0.0845	0.1603	0.0002	0.0092	18.7	0.0025
	50	0.1624	0.3860	0.3110	0.0004	0.0356	28.0	0.0147
	120	0.1638	0.5223	0.9693	0.0008	0.0853	69.2	0.0148
	175	0.2049	0.7959	1.6028	0.0014	0.0903	128	0.0185
	250	0.2426	0.7011	2.3337	0.0022	0.0953	194	0.0219
	500	0.2622	1.1661	2.5319	0.0023	0.1023	233	0.0237
Pavers Composite		0.1774	0.5644	0.9868	0.0009	0.0709	77.9	0.0160
Paving Equipment	25	0.0155	0.0521	0.0993	0.0002	0.0051	12.6	0.0014
	50	0.1384	0.3277	0.2654	0.0003	0.0303	23.9	0.0125
	120	0.1282	0.4084	0.7600	0.0006	0.0668	54.5	0.0116
	175	0.1599	0.6208	1.2577	0.0011	0.0704	101	0.0144
	250	0.1506	0.4363	1.4619	0.0014	0.0592	122	0.0136
Paving Equipment Composite		0.1336	0.4478	0.8963	0.0008	0.0629	68.9	0.0121

SCAB Fleet Average Emission Factors (Diesel)

EF-OFFROAD

Air Basin	SC

		(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
Equipment	**MaxHP**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**CO2**	**CH4**
Plate Compactors	15	0.0050	0.0263	0.0317	0.0001	0.0015	4.3	0.0005
Plate Compactors Composite		0.0050	0.0263	0.0317	0.0001	0.0015	4.3	0.0005
Pressure Washers	15	0.0083	0.0348	0.0553	0.0001	0.0033	4.9	0.0007
	25	0.0122	0.0419	0.0691	0.0001	0.0043	7.1	0.0011
	50	0.0413	0.1143	0.1388	0.0002	0.0115	14.3	0.0037
	120	0.0388	0.1487	0.2674	0.0003	0.0193	24.1	0.0035
Pressure Washers Composite		0.0199	0.0666	0.0989	0.0001	0.0070	9.4	0.0018
Pumps	15	0.0148	0.0528	0.0862	0.0001	0.0062	7.4	0.0013
	25	0.0439	0.1142	0.1884	0.0002	0.0133	19.5	0.0040
	50	0.1339	0.3428	0.3479	0.0004	0.0333	34.3	0.0121
	120	0.1441	0.5136	0.9216	0.0009	0.0744	77.9	0.0130
	175	0.1709	0.7489	1.4815	0.0016	0.0742	140	0.0154
	250	0.1593	0.4846	1.9941	0.0023	0.0609	201	0.0144
	500	0.2450	0.9411	3.1080	0.0034	0.0973	345	0.0221
	750	0.4167	1.5559	5.2721	0.0057	0.1631	571	0.0376
	9999	1.3269	4.8008	15.8590	0.0136	0.4723	1,355	0.1197
Pumps Composite		0.0936	0.3096	0.5545	0.0006	0.0393	49.6	0.0084
Rollers	15	0.0074	0.0386	0.0461	0.0001	0.0019	6.3	0.0007
	25	0.0164	0.0551	0.1049	0.0002	0.0054	13.3	0.0015
	50	0.1270	0.3169	0.2753	0.0003	0.0292	26.0	0.0115
	120	0.1201	0.4177	0.7383	0.0007	0.0641	59.0	0.0108
	175	0.1478	0.6270	1.2022	0.0012	0.0659	108	0.0133
	250	0.1542	0.4540	1.6232	0.0017	0.0603	153	0.0139
	500	0.1987	0.7785	2.0882	0.0022	0.0783	219	0.0179
Rollers Composite		0.1176	0.4212	0.7749	0.0008	0.0547	67.1	0.0106
Rough Terrain Forklifts	50	0.1590	0.4186	0.3558	0.0004	0.0377	33.9	0.0143
	120	0.1213	0.4447	0.7326	0.0007	0.0676	62.4	0.0109
	175	0.1640	0.7302	1.2875	0.0014	0.0749	125	0.0148
	250	0.1523	0.4270	1.6632	0.0019	0.0567	171	0.0137
	500	0.2097	0.6871	2.1987	0.0025	0.0788	257	0.0189
Rough Terrain Forklifts Composite		0.1272	0.4766	0.7988	0.0008	0.0678	70.3	0.0115
Rubber Tired Dozers	175	0.2398	0.8686	1.7881	0.0015	0.1036	129	0.0216
	250	0.2776	0.7758	2.4482	0.0021	0.1071	183	0.0250
	500	0.3621	1.7411	3.2071	0.0026	0.1370	265	0.0327
	750	0.5457	2.6075	4.9024	0.0040	0.2071	399	0.0492
	1000	0.8464	4.1786	8.4813	0.0060	0.3018	592	0.0764
Rubber Tired Dozers Composite		0.3379	1.4127	2.9891	0.0025	0.1288	239	0.0305
Rubber Tired Loaders	25	0.0206	0.0697	0.1314	0.0002	0.0064	16.9	0.0019
	50	0.1560	0.4005	0.3333	0.0004	0.0361	31.1	0.0141
	120	0.1206	0.4268	0.7227	0.0007	0.0660	58.9	0.0109
	175	0.1476	0.6326	1.1513	0.0012	0.0664	106	0.0133
	250	0.1493	0.4210	1.5357	0.0017	0.0563	149	0.0135
	500	0.2172	0.7648	2.1684	0.0023	0.0819	237	0.0196
	750	0.4484	1.5625	4.5660	0.0049	0.1700	486	0.0405
	1000	0.6154	2.2308	7.1368	0.0060	0.2156	594	0.0555
Rubber Tired Loaders Composite		0.1440	0.5078	1.1537	0.0012	0.0651	109	0.0130
Scrapers	120	0.2236	0.7169	1.3034	0.0011	0.1177	93.9	0.0202

SCAB Fleet Average Emission Factors (Diesel)

EF-OFFROAD

Air Basin	SC

		(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
Equipment	**MaxHP**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**CO2**	**CH4**
	175	0.2391	0.9290	1.8284	0.0017	0.1053	148	0.0216
	250	0.2618	0.7368	2.4818	0.0024	0.1006	209	0.0236
	500	0.3650	1.5182	3.4250	0.0032	0.1386	321	0.0329
	750	0.6328	2.6115	6.0373	0.0056	0.2413	555	0.0571
Scrapers Composite		0.3202	1.2424	2.9078	0.0027	0.1256	262	0.0289
Signal Boards	15	0.0072	0.0377	0.0450	0.0001	0.0017	6.2	0.0006
	50	0.1492	0.3827	0.3689	0.0005	0.0364	36.2	0.0135
	120	0.1495	0.5380	0.9446	0.0009	0.0792	80.2	0.0135
	175	0.1907	0.8437	1.6203	0.0017	0.0846	155	0.0172
	250	0.2049	0.6138	2.5094	0.0029	0.0789	255	0.0185
Signal Boards Composite		0.0224	0.0953	0.1615	0.0002	0.0091	16.7	0.0020
Skid Steer Loaders	25	0.0249	0.0700	0.1252	0.0002	0.0079	13.8	0.0022
	50	0.0785	0.2507	0.2463	0.0003	0.0217	25.5	0.0071
	120	0.0607	0.2822	0.4131	0.0005	0.0355	42.8	0.0055
Skid Steer Loaders Composite		0.0692	0.2489	0.2919	0.0004	0.0252	30.3	0.0062
Surfacing Equipment	50	0.0589	0.1520	0.1451	0.0002	0.0142	14.1	0.0053
	120	0.1192	0.4334	0.7683	0.0007	0.0624	63.8	0.0108
	175	0.1071	0.4787	0.9169	0.0010	0.0472	85.8	0.0097
	250	0.1254	0.3883	1.3783	0.0015	0.0494	135	0.0113
	500	0.1854	0.7785	2.0517	0.0022	0.0741	221	0.0167
	750	0.2960	1.2171	3.2929	0.0035	0.1173	347	0.0267
Surfacing Equipment Composite		0.1550	0.6164	1.5685	0.0017	0.0606	166	0.0140
Sweepers/Scrubbers	15	0.0124	0.0729	0.0870	0.0002	0.0033	11.9	0.0011
	25	0.0239	0.0808	0.1524	0.0002	0.0075	19.6	0.0022
	50	0.1508	0.3893	0.3297	0.0004	0.0355	31.6	0.0136
	120	0.1490	0.5329	0.8645	0.0009	0.0843	75.0	0.0134
	175	0.1856	0.8049	1.4276	0.0016	0.0854	139	0.0167
	250	0.1344	0.3643	1.5598	0.0018	0.0489	162	0.0121
Sweepers/Scrubbers Composite		0.1548	0.5380	0.8473	0.0009	0.0686	78.5	0.0140
Tractors/Loaders/Backhoes	25	0.0214	0.0681	0.1317	0.0002	0.0072	15.9	0.0019
	50	0.1257	0.3548	0.3114	0.0004	0.0312	30.3	0.0113
	120	0.0910	0.3623	0.5664	0.0006	0.0515	51.7	0.0082
	175	0.1216	0.5881	0.9646	0.0011	0.0562	101	0.0110
	250	0.1418	0.4037	1.5493	0.0019	0.0523	172	0.0128
	500	0.2630	0.8495	2.7242	0.0039	0.0980	345	0.0237
	750	0.3986	1.2725	4.2276	0.0058	0.1496	517	0.0360
Tractors/Loaders/Backhoes Composite		0.1021	0.3930	0.6747	0.0008	0.0521	66.8	0.0092
Trenchers	15	0.0099	0.0517	0.0617	0.0001	0.0023	8.5	0.0009
	25	0.0400	0.1355	0.2555	0.0004	0.0125	32.9	0.0036
	50	0.1837	0.4365	0.3620	0.0004	0.0405	32.9	0.0166
	120	0.1509	0.4840	0.9082	0.0008	0.0776	64.9	0.0136
	175	0.2254	0.8843	1.7973	0.0016	0.0990	144	0.0203
	250	0.2770	0.8161	2.6802	0.0025	0.1103	223	0.0250
	500	0.3468	1.6352	3.4013	0.0031	0.1373	311	0.0313
	750	0.6586	3.0677	6.5218	0.0059	0.2602	587	0.0594
Trenchers Composite		0.1675	0.4907	0.7598	0.0007	0.0637	58.7	0.0151
Welders	15	0.0124	0.0441	0.0720	0.0001	0.0052	6.2	0.0011

SCAB Fleet Average Emission Factors (Diesel)

EF-OFFROAD

Air Basin	SC

		(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
Equipment	MaxHP	ROG	CO	NOX	SOX	PM	CO2	CH4
	25	0.0254	0.0661	0.1091	0.0001	0.0077	11.3	0.0023
	50	0.1231	0.3025	0.2724	0.0003	0.0287	26.0	0.0111
	120	0.0807	0.2738	0.4899	0.0005	0.0428	39.5	0.0073
	175	0.1333	0.5515	1.0896	0.0011	0.0590	98.2	0.0120
	250	0.1052	0.3022	1.2367	0.0013	0.0400	119	0.0095
	500	0.1327	0.4823	1.5648	0.0016	0.0520	168	0.0120
Welders Composite		0.0805	0.2246	0.2920	0.0003	0.0270	25.6	0.0073

Highest (Most Conservative) EMFAC2007 (version 2.3) Emission Factors for On-Road Heavy-Heavy-Duty Diesel Trucks

Projects in the SCAQMD (Scenario Years 2007 - 2026)
Derived from Peak Emissions Inventory (**Winter**, **Annual**, Summer)

Vehicle Class:
Heavy-Heavy-Duty Diesel Trucks (33,001 to 60,000 pounds)

The following emission factors were compiled by running the California Air Resources Board's EMFAC2007 (version 2.3) Burden Model and extracting the **Heavy-Heavy-Duty Diesel Truck (HHDT)** Emission Factors.

These emission factors can be used to calculate on-road mobile source emissions for the vehicle/emission categories listed in the tables below, by use of the following equation:

Emissions (pounds per day) = N x TL x EF

where N = number of trips, TL = trip length (miles/day), and EF = emission factor (pounds per mile)

The **HHDT-DSL** vehicle/emission category accounts for all emissions from heavy-heavy-duty diesel trucks, including start, running and idling exhaust. In addition, ROG emission factors account for diurnal, hot soak, running and resting emissions, and the PM10 & PM2.5 emission factors account for tire and brake wear.

The **HHDT-DSL, Exh** vehicle/emission category includes only the exhaust portion of PM10 & PM2.5 emissions from heavy-heavy-duty diesel trucks.

Scenario Year: **2007**
All model years in the range 1965 to 2007

HHDT-DSL (pounds/mile)	
CO	**0.01446237**
NOx	**0.04718166**
ROG	**0.00372949**
SOx	**0.00003962**
PM10	**0.00230900**
PM2.5	**0.00204018**
CO2	4.22184493

HHDT-DSL, Exh (pounds/mile)	
PM10	**0.00216752**
PM2.5	**0.00199491**

Scenario Year: **2008**
All model years in the range 1965 to 2008

HHDT-DSL (pounds/mile)	
CO	**0.01361368**
NOx	**0.04458017**
ROG	**0.00351579**
SOx	**0.00004136**
PM10	**0.00215635**
PM2.5	**0.00189990**
CO2	4.21067145
CH4	**0.00016269**

HHDT-DSL, Exh (pounds/mile)	
PM10	**0.00201296**
PM2.5	**0.00185303**

Scenario Year: **2009**
All model years in the range 1965 to 2009

HHDT-DSL (pounds/mile)	
CO	**0.01282236**
NOx	**0.04184591**
ROG	**0.00329320**
SOx	**0.00004013**
PM10	**0.00199572**
PM2.5	**0.00175227**
CO2	4.21080792
CH4	**0.00015249**

HHDT-DSL, Exh (pounds/mile)	
PM10	**0.00185393**
PM2.5	**0.00170680**

Scenario Year: **2010**
All model years in the range 1966 to 2010

HHDT-DSL (pounds/mile)	
CO	**0.01195456**
NOx	**0.03822102**
ROG	**0.00304157**
SOx	**0.00004131**
PM10	**0.00183062**
PM2.5	**0.00160083**
CO2	4.21120578
CH4	**0.00014201**

HHDT-DSL, Exh (pounds/mile)	
PM10	**0.00168861**
PM2.5	**0.00155435**

AQMD

Highest (Most Conservative) EMFAC2007 (version 2.3)
Emission Factors for On-Road Heavy-Heavy-Duty Diesel Trucks

Projects in the SCAQMD (Scenario Years 2007 - 2026)
Derived from Peak Emissions Inventory (**Winter, Annual, Summer**)

Vehicle Class:
Heavy-Heavy-Duty Diesel Trucks (33,001 to 60,000 pounds)

Scenario Year: **2011**

All model years in the range 1967 to 2011

HHDT-DSL (pounds/mile)	
CO	**0.01112463**
NOx	**0.03455809**
ROG	**0.00279543**
SOx	**0.00003972**
PM10	**0.00166087**
PM2.5	**0.00144489**
CO2	4.22045680
CH4	**0.00012910**

HHDT-DSL, Exh (pounds/mile)	
PM10	**0.00151936**
PM2.5	**0.00139772**

Scenario Year: **2012**

All model years in the range 1968 to 2012

HHDT-DSL (pounds/mile)	
CO	**0.01021519**
NOx	**0.03092379**
ROG	**0.00252764**
SOx	**0.00004042**
PM10	**0.00149566**
PM2.5	**0.00129354**
CO2	4.21590774
CH4	**0.00011651**

HHDT-DSL, Exh (pounds/mile)	
PM10	**0.00135537**
PM2.5	**0.00124837**

Scenario Year: **2013**

All model years in the range 1969 to 2013

HHDT-DSL (pounds/mile)	
CO	**0.00931790**
NOx	**0.02742935**
ROG	**0.00226308**
SOx	**0.00004086**
PM10	**0.00133697**
PM2.5	**0.00114629**
CO2	4.21518556
CH4	**0.00010441**

HHDT-DSL, Exh (pounds/mile)	
PM10	**0.00119623**
PM2.5	**0.00109863**

Scenario Year: **2014**

All model years in the range 1970 to 2014

HHDT-DSL (pounds/mile)	
CO	**0.00846435**
NOx	**0.02418049**
ROG	**0.00201594**
SOx	**0.00004092**
PM10	**0.00118458**
PM2.5	**0.00100582**
CO2	4.21279345
CH4	**0.00009261**

HHDT-DSL, Exh (pounds/mile)	
PM10	**0.00104243**
PM2.5	**0.00096059**

Scenario Year: **2015**

All model years in the range 1971 to 2015

HHDT-DSL (pounds/mile)	
CO	**0.00766891**
NOx	**0.02122678**
ROG	**0.00178608**
SOx	**0.00004082**
PM10	**0.00104715**
PM2.5	**0.00087977**
CO2	4.20902225
CH4	**0.00008369**

HHDT-DSL, Exh (pounds/mile)	
PM10	**0.00090631**
PM2.5	**0.00083282**

Scenario Year: **2016**

All model years in the range 1972 to 2016

HHDT-DSL (pounds/mile)	
CO	**0.00704604**
NOx	**0.01887374**
ROG	**0.00161035**
SOx	**0.00003952**
PM10	**0.00094448**
PM2.5	**0.00078443**
CO2	4.21063031
CH4	**0.00007508**

HHDT-DSL, Exh (pounds/mile)	
PM10	**0.00080419**
PM2.5	**0.00073898**

Highest (Most Conservative) EMFAC2007 (version 2.3)
Emission Factors for On-Road Heavy-Heavy-Duty Diesel Trucks

Projects in the SCAQMD (Scenario Years 2007 - 2026)
Derived from Peak Emissions Inventory (**Winter**, **Annual**, Summer)

Vehicle Class:
Heavy-Heavy-Duty Diesel Trucks (33,001 to 60,000 pounds)

Scenario Year: **2017**

All model years in the range 1973 to 2017

HHDT-DSL (pounds/mile)	
CO	**0.00650533**
NOx	**0.01690387**
ROG	**0.00145203**
SOx	**0.00004033**
PM10	**0.00084894**
PM2.5	**0.00069721**
CO2	4.20820129
CH4	**0.00006722**

HHDT-DSL, Exh (pounds/mile)	
PM10	**0.00070873**
PM2.5	**0.00065111**

Scenario Year: **2018**

All model years in the range 1974 to 2018

HHDT-DSL (pounds/mile)	
CO	**0.00604721**
NOx	**0.01526414**
ROG	**0.00131697**
SOx	**0.00003934**
PM10	**0.00076808**
PM2.5	**0.00062383**
CO2	4.20756838
CH4	**0.00006182**

HHDT-DSL, Exh (pounds/mile)	
PM10	**0.00062758**
PM2.5	**0.00057700**

Scenario Year: **2019**

All model years in the range 1975 to 2019

HHDT-DSL (pounds/mile)	
CO	**0.00565433**
NOx	**0.01389113**
ROG	**0.00120235**
SOx	**0.00004032**
PM10	**0.00070198**
PM2.5	**0.00056085**
CO2	4.20637830
CH4	**0.00005499**

HHDT-DSL, Exh (pounds/mile)	
PM10	**0.00056085**
PM2.5	**0.00051320**

Scenario Year: **2020**

All model years in the range 1976 to 2020

HHDT-DSL (pounds/mile)	
CO	**0.00532242**
NOx	**0.01274755**
ROG	**0.00110621**
SOx	**0.00003957**
PM10	**0.00064574**
PM2.5	**0.00050904**
CO2	4.20541416
CH4	**0.00005216**

HHDT-DSL, Exh (pounds/mile)	
PM10	**0.00050364**
PM2.5	**0.00046227**

Scenario Year: **2021**

All model years in the range 1977 to 2021

HHDT-DSL (pounds/mile)	
CO	**0.00503726**
NOx	**0.01179977**
ROG	**0.00103095**
SOx	**0.00004033**
PM10	**0.00059437**
PM2.5	**0.00046287**
CO2	4.21495573
CH4	**0.00004734**

HHDT-DSL, Exh (pounds/mile)	
PM10	**0.00045411**
PM2.5	**0.00041729**

Scenario Year: **2022**

All model years in the range 1978 to 2022

HHDT-DSL (pounds/mile)	
CO	**0.00478830**
NOx	**0.01098794**
ROG	**0.00096142**
SOx	0.00004106
PM10	**0.00055427**
PM2.5	**0.00042597**
CO2	4.21520828
CH4	**0.00004448**

HHDT-DSL, Exh (pounds/mile)	
PM10	**0.00041399**
PM2.5	**0.00037807**

AQMD

Highest (Most Conservative) EMFAC2007 (version 2.3) Emission Factors for On-Road Heavy-Heavy-Duty Diesel Trucks

Projects in the SCAQMD (Scenario Years 2007 - 2026)
Derived from Peak Emissions Inventory (**Winter**, **Annual**, **Summer**)

Vehicle Class:
Heavy-Heavy-Duty Diesel Trucks (33,001 to 60,000 pounds)

Scenario Year: **2023**
All model years in the range 1979 to 2023

HHDT-DSL (pounds/mile)	
CO	**0.00457902**
NOx	**0.01031407**
ROG	**0.00090210**
SOx	**0.00004009**
PM10	**0.00052122**
PM2.5	**0.00039592**
CO2	4.21483461
CH4	**0.00004176**

HHDT-DSL, Exh (pounds/mile)	
PM10	**0.00037922**
PM2.5	**0.00034915**

Scenario Year: **2024**
All model years in the range 1980 to 2024

HHDT-DSL (pounds/mile)	
CO	**0.00444444**
NOx	**0.00974372**
ROG	**0.00084009**
SOx	**0.00003930**
PM10	**0.00050766**
PM2.5	**0.00038320**
CO2	4.19552935
CH4	**0.00003930**

HHDT-DSL, Exh (pounds/mile)	
PM10	**0.00036682**
PM2.5	**0.00033735**

Scenario Year: **2025**
All model years in the range 1981 to 2025

HHDT-DSL (pounds/mile)	
CO	**0.00431086**
NOx	**0.00932573**
ROG	**0.00080206**
SOx	**0.00004018**
PM10	**0.00048541**
PM2.5	**0.00036326**
CO2	4.19512979
CH4	**0.00003697**

HHDT-DSL, Exh (pounds/mile)	
PM10	**0.00034397**
PM2.5	**0.00031664**

Scenario Year: **2026**
All model years in the range 1982 to 2026

HHDT-DSL (pounds/mile)	
CO	**0.00420297**
NOx	**0.00898990**
ROG	**0.00077178**
SOx	**0.00003946**
PM10	**0.00046717**
PM2.5	**0.00034564**
CO2	4.19349747
CH4	**0.00003630**

HHDT-DSL, Exh (pounds/mile)	
PM10	**0.00032670**
PM2.5	**0.00029830**

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Appendix C
Emission Calculations for Operation and Maintenance Activities
Lucerne Valley Solar Project

Table No.	Table Description
Table C1	Summary of Operational Emissions
Table C2	Criteria Pollutants Emissions from Operations and Maintenance
Table C3	Fugitive Dust Emission Factors - Roads
Table C4	Fugitive Dust Emissions from Road
Table C5	GHG Emissions from Operation and Maintenance Activities

Table C1

Summary of Operational Emissions

Estimation per year

Emission Type	Source	Emissions (tons/year)						GHG Emissions (metric tons/year)
		ROG	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2e
Exhaust Emissions	Heavy Duty Diesel Truck	0.000	0.001	0.001	0.005	0.000	0.000	0.5
	ATVs	17	371	3.312	0.387	0.533	0.533	0.9
Fugitive Dust Emissions	Roads	-	-	-	-	0.136	0.014	-
Subtotal		**16.9**	**371.3**	**3.3**	**0.4**	**0.7**	**0.5**	**1.3**

Estimation per day

Emission Type	Source	Emissions (tons/day)					
		ROG	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$
Exhaust Emissions	Heavy Duty Diesel Truck	0.0001	0.0004	0.0011	0.0000	0.0001	0.0000
	ATVs	0.0004	0.0091	0.0001	0.0000	0.0000	0.0000
Fugitive Dust Emissions	Roads	-	-	-	-	0.0104	0.0011
Subtotal per day		**0.001**	**0.009**	**0.001**	**0.000**	**0.011**	**0.001**

Estimation for the first year (125 days of operations)

Emission Type	Source	Emissions (tons/year)					
		ROG	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$
Exhaust Emissions	Heavy Duty Diesel Truck	0.01	0.04	0.14	0.00	0.01	0.01
	ATVs	0.05	1.14	0.01	0.00	0.00	0.00
Fugitive Dust Emissions	Roads	-	-	-	-	1.31	0.13
Subtotal first yeat of operations		**0.06**	**1.19**	**0.15**	**0.00**	**1.31**	**0.14**

Table C2
Criteria Pollutants Emissions from Operations and Maintenance
Lucerne Valley Solar Project

Solar Panel Cleaning and Array Inspection (Quarterly)

Project Component	Vehicle Type	No. of Units	Weekly (days/wk)	Annual (wk/yr)	Vehicle Mileage		
					Daily per Vehicle (VMT/day)	Total Daily (VMT/day)	Total Annual (VMT/yr)
Solar PV Field	Water Truck	1	1	4	60	60	240
Solar PV Field	All-Terrain Vehicle	2	1	4	60	120	480
					-	-	-

Notes:

Vehicles Mile Traveled estimated as 60 miles per roundtrip, considering an average distance from the closest cities (Barstow, Victorville and Hesperia) to the project site.

Number of Vehicles estimated based on similar Solar PV projects

Inverter and Switchyard maintenance

Project Component	Vehicle Type	No. of Units	Weekly (days/wk)	Annual (wk/yr)	Vehicle Mileage		
					Vehicle (VMT/day)	Total Daily (VMT/day)	Total Annual (VMT/yr)
Mechanical Inspection	All-Terrain Vehicle	1	1	52	60	60	3120
Electrical Inspection	All-Terrain Vehicle	1	1	1	60	60	60
					-	-	-

Notes:

The inverter mechanical maintenance is conducted monthly and consists of: inspection of intake air ducts, cooling fans, and refrigeration units.

Electrical inspections are conducted yearly and consists of: inspection of seals, electrical connections (torque setting), and transformer and/or inductor enclosure.

Number of Vehicles estimated based on similar Solar PV projects

Emission Calculations

Pollutant	Water Truck Emission Factor[a] (lb/VMT)	ATV Emission Factor[b] (lb/VMT)	Daily Emissions (lbs/day)			Annual Emissions (tons/yr)		
			Truck Operations	ATV Operations	TOTAL	Truck Operations	ATV Operations	TOTAL
ROG	0.003042	0.0046270	0.2	0.8	1.0	0.0004	16.9	16.9
CO	0.011955	0.10146	0.7	18.3	19.0	0.0014	371.3	371
NOx	0.038221	0.0009048	2.3	0.2	2.5	0.0046	3.3	3.3
SOx	0.000041	0.00010582	0.0	0.0	0.0	0.0000	0.4	0.4
PM10	0.001831	0.00014550	0.1	0.0	0.1	0.0002	0.5	0.5
PM2.5	0.001601	0.00014550	0.1	0.0	0.1	0.0002	0.5	0.5

Notes:

a. South Coast Air Quality Management District (SCAQMD). 2008. Spreadsheet onroadEF07_26.xls.

b. Emission factors for ATVs from EPA's NONROAD model.

Table C3
Fugitive Dust Emission Factors - Roads

Unpaved Roads - Emission Factor Derivation

$E = k(s/12)^a(W/3)^b$ AP-42 Section 13.2.2 (11/06 version)

where:

E = particulate emission factor (lb/VMT)
k, a, b = empirical constants for industrial roads
s = surface material silt content (%)
W = average vehicle weight (tons)

Parameter	Units	PM_{10}	$PM_{2.5}$	Reference
Mean Vehicle Weight	**tons**	2	2	Assumption
Constant, k	lb/VMT	1.5	0.15	Table 13.2.2-2 (worst case)
Constant, a		0.9	0.9	Table 13.2.2-2 (worst case)
Constant, b		0.45	0.45	Table 13.2.2-2 (worst case)
Silt content, s	%	8.5	8.5	Table 13.2..2-1 (construction sites)
Uncontrolled Emission factor, E	**lb/VMT**	**0.92**	**0.092**	**Calculation**
Control Efficiency for Watering	%	0.65	0.65	Assumption
Controlled Emission factor, E	**lb/VMT**	**0.32**	**0.032**	**Calculation**

Paved Roads - Emission Factor Derivation Table

$E = (k(sL/2)^{0.65}(W/3)^{1.5}-C)$ AP-42 Section 13.2.1 (11/06 version)

where:

E = particulate emission factor (lb/VMT)
k = particle size multiplier
sL = road surface silt loading (g/m^2)
W = average vehicle weight (tons)
C = emission factor for 1980's vehicle fleet exhaust, break wear and tire wear

Parameter	Units	PM_{10}	$PM_{2.5}$	Reference
Mean Vehicle Weight	tons	3	3	Assumption
k factor	lb/VMT	0.016	0.0024	Table 13.2-1.1
Silt Loading, sL	g/m^2	0.6	0.6	Table 13.2.1-3
Emission factor, C	lb/VMT	0.00047	0.00036	Table 13.2.1-2
Uncontrolled Emission factor, E	**lb/VMT**	**0.00685**	**0.000737**	**Calculation**

Table C4

Fugitive Dust Emissions from Road

Annual Emissions

	Total VMT/year		Emissions (tons/year)					
			Unpaved Roads		Paved Roads		All Roads	
Fuel Type	Paved Roads	Unpaved Roads	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Heavy Duty Diesel Truck	192	48	0.008	0.001	0.001	0.000	0.01	0.001
ATVs	2,928	732	0.12	0.012	0.010	0.001	0.13	0.01
Total	-	-	**0.0077**	**0.0008**	**0.0007**	**0.0001**	**0.136**	**0.014**

Daily Emissions

	Total VMT/day		Emissions (tons/day)					
			Unpaved Roads		Paved Roads		All Roads	
Fuel Type	Paved Roads	Unpaved Roads	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Heavy Duty Diesel Truck	48	12	0.002	0.0002	0.0002	0.000	0.002	0.000
ATVs	192	48	0.008	0.001	0.001	0.0001	0.008	0.001
Total	-	-	**0.0019**	**0.0002**	**0.0002**	**0.0000**	**0.010**	**0.001**

Table C5
GHG Emissions from Operation and Maintenance Activities
Lucerne Valley Solar Project

GHG Emissions Estimation for Operation and Maintenance Activities

Emission Type	GHG	Emission Factors [a,b,c]	Emission Factor Units	Annual Emissions (lbs/yr)	Annual Emissions (tonnes/yr)	Global Warming Potential	Annual Emissions [as CO2-eq] (tonnes/yr)
Water Truck Emissions (Maintenance Activities)	CO2	4.211	lb/VMT	1,011	0.5	1	0.5
	CH4	0.000142	lb/VMT	0.034	0.00002	23	0.0
ATVs Emissions (Maintenance Activities)	CO2	0.516610	lb/VMT	1,891	0.9	1	0.9
	CH4	0.000000	lb/VMT	0	0.0	23	0.0
Electrical Consumption	CO2	0.724120	lb/kWh			1	
	CH4	0.000030	lb/kWh			23	
SF6 Leakage	SF6	0.50%	% per year per capacity			23,900	
Refrigerant Leakage	TBD	0.50%	% per year per capacity			TBD	
TOTAL	-	-	-	-	-	-	1.3

Notes:

a. South Coast Air Quality Management District (SCAQMD). 2008. Spreadsheet onroadEF07_26.xls: "Highest (Most Conservative) EMFAC2007 (version 2.3) Emission Factors for On-Road Passenger Vehicles & Delivery Trucks". Downloaded from SCAQMD Website.

c. Emission factors for ATVs from EPA's NONROAD model.

b. U.S. Environmental Protection Agency (EPA). 2009. eGrid2007 Version 1.1 Year 2005 GHG Annual Output Emission Rates (California). Downloaded from www.epa.gov/egrid

Table C6
On-Road Vehicle Exhaust Emission Factors

Equipment Type	Emission Factor[a,b] (pounds/VMT)							
	ROG	CO	NOx	SOx	PM10	PM2.5	CO2	CH4
Heavy Duty Diesel Trucks	0.003042	0.011955	0.038221	0.000041	0.001831	0.001601	4.211206	0.000142
Light Duty Trucks	0.002590	0.01844	0.02062	0.0000270	0.0007512	0.0006243	2.732	0.0001258
Gasoline Passenger Vehicles	0.0009140	0.00826	0.0009181	0.00001077	0.00008698	0.00005478	1.096	0.00008146
ATVs	0.0046270	0.10146	0.0009048	0.00010582	0.00014550	0.00014550	0.517	0.00000000

Notes:

a. Emission factors for trucks and vehicles from SCAQMD file "onroadEF07_26.xls".

b. Emission factors for ATVs from EPA's NONROAD model.

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Appendix B
Emission Calculations for Alternative 5 Construction Activities
Lucerne Valley Solar Project

Table No.	Table Description
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Table B1-a

Total Construction Emissions - Alternative 5 Phase I

Lucerne Valley Solar Project

Emission Type	Source	Emissions (tons)						GHG Emissions (metric tons)
		ROG	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2e
Exhaust Emissions	Non Road Equipment	0.35	1.42	3.04	0.00	0.16	0.16	332
	On Road Vehicles	0.04	0.14	0.45	0.00	0.02	0.02	45
Fugitive Dust Emissions	Construction Activities	-	-	-	-	0.32	0.05	-
	Roads (Site and Off-Site)	-	-	-	-	2.25	0.25	-
Subtotal		**0.39**	**1.56**	**3.50**	**0.00**	**2.75**	**0.47**	**377**

Estimation for the first year (185 days of operations)

Emission Type	Source	Emissions (tons/year)					
		ROG	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$
Exhaust Emissions	Heavy Duty Diesel Truck	0.02	0.07	0.21	0.0002	0.01	0.01
	ATVs	0.08	1.69	0.02	0.0018	0.002	0.002
Fugitive Dust Emissions	Roads	-	-	-	-	1.93	0.19
Subtotal Operational Emissions First Year		**0.09**	**1.76**	**0.23**	**0.002**	**1.94**	**0.21**

Estimation for the first year (180 days of construction / 185 days of operations)	Emissions (tons/year)					
	ROG	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$
	0.48	3.32	3.72	0.01	4.70	0.68

Table B1-b

Total Construction Emissions - Phase II

Lucerne Valley Solar Project

Emission Type	Source	Emissions (tons)						GHG Emissions (metric tons)
		ROG	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2e
Exhaust Emissions	Non Road Equipment	0.35	1.42	3.04	0.00	0.16	0.16	332
	On Road Vehicles	0.04	0.14	0.45	0.000	0.02	0.02	45
Fugitive Dust Emissions	Construction Activities	-	-	-	-	0.26	0.05	-
	Roads (Site and Off-Site)	-	-	-	-	2.25	0.04	-
Subtotal		**0.39**	**1.56**	**3.50**	**0.00**	**2.69**	**0.26**	**377**

Estimation for the first year (185 days of operations)

Emission Type	Source	Emissions (tons/year)					
		ROG	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$
Exhaust Emissions	Heavy Duty Diesel Truck	0.02	0.07	0.21	0.0002	0.01	0.01
	ATVs	0.08	1.69	0.02	0.00	0.00	0.00
Fugitive Dust Emissions	Roads	-	-	-	-	1.93	0.19
Subtotal Operational Emissions First Year		**0.09**	**1.76**	**0.23**	**0.002**	**1.94**	**0.21**

0.48 3.32 3.72 0.01 4.63 0.46

Table B2-a
Summary of Daily Construction Emissions - Phase I
Lucerne Valley Solar Project

Emission Type	Source	Emissions (lbs/day)							
		ROG	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2	CH_4
Exhaust Emissions	Non Road Equipment	4.8	18.5	38.7	0.05	2.1	2.1	4,222	0.4
	On Road Vehicles	0.3	1.2	3.8	0.00	0.2	0.2	416	0.01
Fugitive Dust Emissions	Construction Activities	-	-	-	-	43	6	-	-
	Roads (Site and Off-Site)	-	-	-	-	48	5	-	-
Subtotal		**5**	**20**	**42**	**0.1**	**94**	**14**	**4,638**	**0**

Table B2-b
Summary of Daily Construction Emissions - Phase II
Lucerne Valley Solar Project

Emission Type	Source	Emissions (lbs/day)							
		ROG	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2	CH_4
Exhaust Emissions	Non Road Equipment	2.4	9.3	19.3	0.0	1.1	1.1	2,111	0.2
	On Road Vehicles	0.3	1.2	3.8	0.00	0.2	0.2	416	0.01
Fugitive Dust Emissions	Construction Activities	-	-	-	-	48	7	-	-
	Roads (Site and Off-Site)	-	-	-	-	48	5	-	-
Subtotal		**3**	**10**	**23**	**0.0**	**98**	**13**	**2,527**	**0**

Table B3
Non-Road Diesel Equipment Exhaust Emission Factors
Lucerne Valley Solar Project

Equipment	Maximum Operating Range (hp)	Composite Emission Factor (lb/hr)						
		ROG	CO	NO_x	SO_2	PM	CO_2	CH_4
Vibratory Post Driver / Drill Rig	Composite	0.1052	0.5146	1.1331	0.0017	0.0498	165	0.0095
Crawler Tractors	Composite	0.1861	0.6409	1.3854	0.0013	0.0854	114	0.0168
Excavators	Composite	0.1483	0.5581	1.1502	0.0013	0.0638	120	0.0134
Forklifts	Composite	0.0686	0.2319	0.5161	0.0006	0.0281	54.4	0.0062
Generator Set	15	0.0172	0.0726	0.1154	0.0002	0.0069	10.2	0.0016
Graders	Composite	0.1723	0.6314	1.4338	0.0015	0.0753	133	0.0155
Rollers	Composite	0.1176	0.4212	0.7749	0.0008	0.0547	67.1	0.0106
Scrapers	Composite	0.3202	1.2424	2.9078	0.0027	0.1256	262	0.0289
Tractors/Loaders/Backhoes	Composite	0.1021	0.3930	0.6747	0.0008	0.0521	66.8	0.0092
Plate Compactor	Composite	0.0050	0.0263	0.0317	0.0001	0.0015	4.3	0.0005

Source: South Coast Air Quality Management District (SCAQMD). 2008. Off-road Mobile Source Emission Factors (Scenario Years 2007 – 2025).

Notes:

Composite emission factors have horsepower rating and load factors already built into the emission factors. SCAQMD recommends using composite factors if the CEQA practitioner does not know these two parameters when calculating off-road mobile source emissions

Table 4-A
Total Emissions for Diesel Non-Road Equipment - Phase I
Lucerne Valley Solar Project

Construction Phase	Equipment Type	Equipment Engine Size (hp) [a]	Fuel Type	Total Hourly Usage for All Units (hrs)	Criteria PollutantsTotal Emissions (tons)					GHG Total Emissions (metric tons)		
					ROG	CO	NO_x	SO_2	PM	CO_2	CH_4	CO_2e
All Construction Activities	Vibratory Post Driver	100-175	Diesel	2,430	0.128	0.625	1.377	0.002	0.061	181.7	0.0	181.9
	Crawler Tractors/Dozer	100-175	Diesel	300	0.028	0.096	0.208	0.000	0.013	15.5	0.0	15.6
	Excavators	175-300	Diesel	120	0.009	0.033	0.069	0.000	0.004	6.5	0.0	6.5
	Forklifts/Aerial Lifts/ Booms	50-100	Diesel	4,000	0.137	0.464	1.032	0.001	0.056	98.7	0.0	98.9
	Generator/Compressor	5-15	Diesel	2,400	0.021	0.087	0.138	0.000	0.008	11.1	0.0	11.1
	Graders	175-300	Diesel	48	0.004	0.015	0.034	0.000	0.002	2.9	0.0	2.9
	Rollers/Compactors	100-175	Diesel	300	0.018	0.063	0.116	0.000	0.008	9.1	0.0	9.2
	Scrapers	175-300	Diesel	24	0.004	0.015	0.035	0.000	0.002	2.9	0.0	2.9
	Tractors/Loaders/Backhoes	100-175	Diesel	96	0.005	0.019	0.032	0.000	0.002	2.9	0.0	2.9
	Vibratory Plate (hand held)	10 -- 15	Diesel	24	0.000	0.000	0.000	0.000	0.000	0.0	0.0	0.0
	TOTAL				**0.353**	**1.418**	**3.043**	**0.004**	**0.156**	**331**	**0.029**	**332**

Notes:

(a) Composite emission factors recommended by the South Coast Air Management District were used per equipment, except for Generator/Compressor (maximum hp 15).

Table 4-B
Total Emissions for Diesel Non-Road Equipment - Phase II
Lucerne Valley Solar Project

Construction Phase	Equipment Type	Equipment Engine Size (hp) [a]	Fuel Type	Total Hourly Usage for All Units (hrs)	Criteria PollutantsTotal Emissions (tons)					GHG Total Emissions (metric tons)		
					ROG	CO	NO_x	SO_2	PM	CO_2	CH_4	CO_2e
All Construction Activities	Vibratory Post Driver	100-175	Diesel	1,215	0.064	0.313	0.688	0.001	0.030	91	0.0	91
	Crawler Tractors/Dozer	100-175	Diesel	150	0.014	0.048	0.104	0.000	0.006	8	0.0	8
	Excavators	175-300	Diesel	60	0.004	0.017	0.035	0.000	0.002	3	0.0	3
	Forklifts/Aerial Lifts/ Booms	50-100	Diesel	2,000	0.069	0.232	0.516	0.001	0.028	49	0.0	49
	Generator/Compressor	5 -- 15	Diesel	1,200	0.010	0.044	0.069	0.000	0.004	6	0.0	6
	Graders	175-300	Diesel	24	0.002	0.008	0.017	0.000	0.001	1	0.0	1
	Rollers/Compactors	100-175	Diesel	150	0.009	0.032	0.058	0.000	0.004	5	0.0	5
	Scrapers	175-300	Diesel	12	0.002	0.007	0.017	0.000	0.001	1	0.0	1
	Tractors/Loaders/Backhoes	100-175	Diesel	48	0.002	0.009	0.016	0.000	0.001	1	0.0	1
	Vibratory Plate (hand held)	10-15	Diesel	12	0.000	0.000	0.000	0.000	0.000	0	0.0	0
	TOTAL				**0.18**	**0.71**	**1.52**	**0.00**	**0.08**	**166**	**0.014**	**166**

Notes:

(a) Composite emission factors recommended by the South Coast Air Management District were used per equipment, except for Generator/Compressor (maximum hp 15).

Table 5-A
Daily Emissions for Diesel Non-Road Equipment - Phase I
Lucerne Valley Solar Project

Construction Phase	Equipment Type	Equipment Engine Size (hp) [a]	Fuel Type	Total Hourly Usage for All Units (hrs)	Estimated daily usage [b] (hrs/day)	Criteria PollutantsTotal Emissions (lbs/day)					GHG Total Emissions (lbs/day)	
						ROG	CO	NO_x	SO_2	PM	CO_2	CH_4
All Construction Activities	Vibratory Post Driver	100-175	Diesel	2,430	10	1.065	5.211	11.473	0.018	0.505	1669	0.096
	Crawler Tractors/Dozer	100-175	Diesel	300	1	0.233	0.801	1.732	0.002	0.107	143	0.021
	Excavators	175-300	Diesel	120	1	0.074	0.279	0.575	0.001	0.032	60	0.007
	Forklifts/Aerial Lifts/ Booms	50-100	Diesel	4,000	17	1.143	3.865	8.601	0.010	0.468	907	0.103
	Generator/Compressor	5 -- 15	Diesel	2,400	10	0.172	0.726	1.154	0.002	0.069	102	0.016
	Graders	175-300	Diesel	48	2	0.331	1.212	2.753	0.003	0.145	255	0.030
	Rollers/Compactors	100-175	Diesel	300	12	1.412	5.054	9.298	0.009	0.657	805	0.127
	Scrapers	175-300	Diesel	24	1	0.307	1.193	2.792	0.003	0.121	252	0.028
	Tractors/Loaders/Backhoes	100-175	Diesel	96	0	0.041	0.157	0.270	0.000	0.021	27	0.004
	Vibratory Plate (hand held)	10 -- 15	Diesel	24	1	0.005	0.025	0.030	0.000	0.001	4	0.000
	TOTAL					**4.8**	**18.5**	**38.7**	**0.0**	**2.1**	**4,222**	**0.432**

Notes:

(a) Composite emission factors recommended by the South Coast Air Management District were used per equipment, except for Generator/Compressor (maximum hp 15).

(b) Daily usage is estimated per a composite number of equipment and based on a 240 days of total construction period.

Exception on daily usage assumption includes graders, scrapers, vibratory plates and roller/compactors, since the grading activities are intended to have a 25-day duration.

Table 5-B
Daily Emissions for Diesel Non-Road Equipment - Phase II
Lucerne Valley Solar Project

Construction Phase	Equipment Type	Equipment Engine Size (hp) [a]	Fuel Type	Total Hourly Usage for All Units (hrs)	Estimated daily usage [b] (hrs/day)	Criteria PollutantsTotal Emissions (lbs/day)					GHG Total Emissions (lbs/day)	
						ROG	CO	NO_x	SO_2	PM	CO_2	CH_4
All Construction Activities	Vibratory Post Driver	100-175	Diesel	1,215	5	0.533	2.605	5.736	0.009	0.252	834.57	0.048
	Crawler Tractors/Dozer	100-175	Diesel	150	1	0.116	0.401	0.866	0.001	0.053	71.26	0.010
	Excavators	175-300	Diesel	60	0	0.037	0.140	0.288	0.000	0.016	29.90	0.003
	Forklifts/Aerial Lifts/ Booms	50-100	Diesel	2,000	8	0.571	1.933	4.301	0.005	0.234	453.30	0.052
	Generator/Compressor	5-15	Diesel	1,200	5	0.086	0.363	0.577	0.001	0.034	51.04	0.008
	Graders	175-300	Diesel	24	1	0.165	0.606	1.376	0.001	0.072	127.43	0.015
	Rollers/Compactors	100-175	Diesel	150	6	0.706	2.527	4.649	0.005	0.328	402.31	0.064
	Scrapers	175-300	Diesel	12	0	0.154	0.596	1.396	0.001	0.060	126.000	0.014
	Tractors/Loaders/Backhoes	100-175	Diesel	48	0	0.020	0.079	0.135	0.000	0.010	13.36	0.002
	Vibratory Plate (hand held)	10-15	Diesel	12	0	0.002	0.013	0.015	0.000	0.001	2.071	0.000
	TOTAL					**2.4**	**9.3**	**19.3**	**0.0**	**1.1**	**2,111**	**0.216**

Notes: Construction of Phase II is assumed to have the same duration and equipment/vehicle list as Phase I

(a) Composite emission factors recommended by the South Coast Air Management District were used per equipment, except for Generator/Compressor (maximum hp 15).

(b) Daily usage is estimated per a composite number of equipment and based on a 240 days of total construction period, except for gradind equipment (25 days).

Exception on daily usage assumption includes graders, scrapers, vibratory plates and roller/compactors.

Table 6

On-Road Vehicle Usage Phases I and II

Lucerne Valley Solar Project

Per

Phase I

Vehicle Type	Construction Phase	Vehicle Description	Vehicle Class	Total Working Hours	Total Working Days	Working hours per day	Estimated speed (mph)	Total Daily VMT All Units (VMT/day)			Total Overall VMT of All Units (VMT)		
								Unpaved Roads	Paved Roads	TOTAL	Unpaved Roads	Paved Roads	TOTAL
Heavy Duty Diesel Truck	All	Dump Truck	HDDV6	80	180	0.4	25	2.2	9	11	400	1,600	2,000
		Concrete Truck	HDDV6	80	180	0.4	25	2.2	9	11	400	1,600	2,000
		Tender Truck	HDDV6	80	180	0.4	25	2.2	9	11	400	1,600	2,000
		Highway Tractor	HDDV6	48	180	0.3	25	1.3	5	7	240	960	1,200
		Flatbed Truck	HDDV3	600	180	3.3	25	16.7	67	83	3,000	12,000	15,000
		Water Truck	HDDV6	60	180	0.3	25	1.7	7	8	300	1,200	1,500
	Subtotal	-		-	-	-	-	**26**	**105**	**132**	**4,740**	**18,960**	**23,700**

Phase II

Vehicle Type	Construction Phase	Vehicle Description	Vehicle Class	Total Working Hours	Total Working Days	Working hours per day	Estimated speed (mph)	Total Daily VMT All Units (VMT/day)			Total Overall VMT of All Units (VMT)		
								Unpaved Roads	Paved Roads	TOTAL	Unpaved Roads	Paved Roads	TOTAL
Heavy Duty Diesel Truck	All	Dump Truck	HDDV6	40	90	0.4	25	2.2	9	11	200	800	1,000
		Concrete Truck	HDDV6	40	90	0.4	25	2.2	9	11	200	800	1,000
		Tender Truck	HDDV6	40	90	0.4	25	2.2	9	11	200	800	1,000
		Highway Tractor	HDDV6	24	90	0.3	25	1.3	5	7	120	480	600
		Flatbed Truck	HDDV3	300	90	3.3	25	16.7	67	83	1,500	6,000	7,500
		Water Truck	HDDV6	300	90	3.3	25	16.7	67	83	1,500	6,000	7,500
	Subtotal	-		-	-	-	-	**41**	**165**	**207**	**3,720**	**14,880**	**18,600**

Table 7
On-Road Vehicle Exhaust Emission Factors
Lucerne Valley Solar Project

Equipment Type	Emission Factor[a] (pounds/VMT)							
	ROG	CO	NOx	SOx	PM10	PM2.5	CO2	CH_4
Heavy Duty Diesel Trucks	0.003042	0.011955	0.038221	0.000041	0.001831	0.001601	4.211206	0.000142
Light Duty Trucks	0.002590	0.01844	0.02062	0.0000270	0.0007512	0.0006243	2.732	0.0001258
Gasoline Passenger Vehicles	0.0009140	0.00826	0.0009181	0.00001077	0.00008698	0.00005478	1.096	0.00008146
ATVs	0.0046270	0.10146	0.0009048	0.00010582	0.00014550	0.00014550	0.517	0.00000000

Notes:

a. Emission Factors for On-Road Heavy-Heavy-Duty Diesel Trucks. SCAQMD (Scenario Year: 2010).

Table 8-A
Total and Daily Exhaust Emissions for On Road Vehicles - Phase I
Lucerne Valley Solar Project

Total Emissions

Vehicle Type	Total Overall Miles Travelled (VMT)	Total Emissions (tons)						Total Emissions (metric tons)	
		ROG	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2	CH_4
Heavy Duty Diesel Trucks	23,700	0.04	0.14	0.45	0.00	0.02	0.02	45	0
Total	-	**0.04**	**0.14**	**0.45**	**0.00**	**0.02**	**0.02**	**45**	**0**

Daily Emissions

Vehicle Type	Total Overall Miles Travelled (VMT)	Total Emissions (lbs/day)							
		ROG	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2	CH_4
Heavy Duty Diesel Trucks	23,700	0	1	4	0.00	0.2	0.2	416	0.01
Total	-	**0**	**1**	**4**	**0.00**	**0.2**	**0.2**	**416**	**0.01**

Table 8-B
Total and Daily Exhaust Emissions for On Road Vehicles - Phase II
Lucerne Valley Solar Project

Total Emissions

Vehicle Type	Total Overall Miles Travelled (VMT)	Total Emissions (tons)						Total Emissions (metric tons)	
		ROG	CO	NO$_x$	SO$_2$	PM$_{10}$	PM$_{2.5}$	CO$_2$	CH$_4$
Heavy Duty Diesel Trucks	23,700	0.04	0.14	0.45	0.00	0.02	0.02	45	0
Total	-	**0.04**	**0.14**	**0.45**	**0.00**	**0.02**	**0.02**	**45**	**0**

Daily Emissions

Vehicle Type	Total Overall Miles Travelled (VMT)	Total Emissions (lbs/day)							
		ROG	CO	NO$_x$	SO$_2$	PM$_{10}$	PM$_{2.5}$	CO$_2$	CH$_4$
Heavy Duty Diesel Trucks	23,700	0	1	4	0	0	0	416	0
Total	-	**0**	**1**	**4**	**0**	**0**	**0**	**416**	**0**

Notes: Construction of Phase II is assumed to have the same duration and equipment/vehicle list as Phase I

Table 9-A
Fugitve Dust Emissions - Construction Site - Phase I

Construction Activity	Average Daily Disturbance (acres)	Duration of Activity (months)	Emission Factor[a] (ton/acre/month)		Emissions (tons)		Daily Emissions (lbs/day)	
			PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
Site Clearing and Grading	7.2	0.50	0.090	0.0126	0.32	0.05	43	6
Access Roads	1.4	0.17	0.090	0.0126	0.02	0.00	8.4	1.2
Switchyard	0.0006	0.17	0.090	0.0126	0.00	0.00	0.0	0.0
Underground Power Line	0.1667	1	0.090	0.0126	0.02	0.00	1.0	0.1
Control/Maintenance Building	0.0001	4	0.090	0.0126	0.00	0.00	0.00	0.00
Parking / Laydown Area	0.1	0.17	0.090	0.0126	0.00	0.00	0.00	0.00
Total	-	-	-	-	**0.36**	**0.05**	**53**	**7**

Notes:

a. See emission factor derivation table below.

b. Total site area for Phase I: 516 acres. Total developed area is 108 acres for Phase 1. Total duration of grading: 15 days.

Emission Factor Derivation Table

Parameter	**Units**	**TSP[1]**	**PM_{10}(2)**	**$PM_{2.5}$(3)**
Uncontrolled Emission Factor[1] (based on 30 days/month)	ton/acre/month	0.2	0.15	0.021
Controlled Emission Factor[5] (based on 24 days/month)	ton/acre/month	0.12	0.090	0.0126

Notes:

1. Emission factor from AP-42 Section 13.2.3 for TSP.
2. PM_{10} emission factor calculated by multiplying TSP emission factor by 0.75 (AP-42 Section 11.9, Table 11.9-1)
3. $PM_{2.5}$ emission factor calculated by multiplying TSP emission factor by 0.105 (AP-42 Section 11.9, Table 11.9-1)
4. Calculated by multiplying 30-day emission factor by 0.8 (24 days/ 30 days).
4. Assume dust 40% duct control factor based on as-needed watering. Does not include any control for winter conditions.

Table 9-B
Fugitve Dust Emissions - Construction Site - Phase II

Construction Activity	Average Daily Disturbance (acres)	Duration of Activity (months)	Emission Factor^a (ton/acre/month)		Emissions (tons)		Daily Emissions (lbs/day)	
			PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
Site Clearing and Grading	8	0.33	0.090	0.0126	0.24	0.03	48	7
Switchyard	0.0006	0.17	0.090	0.0126	0.00	0.00	0.0	0.0
Underground Power Line	0.1667	1	0.090	0.0126	0.02	0.00	1.0	0.1
Parking / Laydown Area	0.1	0.17	0.090	0.0126	0.00	0.00	0.00	0.00
Total	**-**	**-**	**-**	**-**	**0.26**	**0.04**	**49**	**7**

Notes:

a. See emission factor derivation table below.

b. Total site area for Phase I: 516 acres. Total developed area is 120 acres for Phase II. Total duration of grading: 15 days.

Emission Factor Derivation Table

Parameter	Units	TSP^1	$PM_{10}^{(2)}$	$PM_{2.5}^{(3)}$
Uncontrolled Emission Factor^1 (based on 30 days/month)	ton/acre/month	0.2	0.15	0.021
Controlled Emission Factor^5 (based on 24 days/month)	ton/acre/month	0.12	0.090	0.0126

Notes:

1. Emission factor from AP-42 Section 13.2.3 for TSP.
2. PM_{10} emission factor calculated by multiplying TSP emission factor by 0.75 (AP-42 Section 11.9, Table 11.9-1)
3. $PM_{2.5}$ emission factor calculated by multiplying TSP emission factor by 0.105 (AP-42 Section 11.9, Table 11.9-1)
4. Calculated by multiplying 30-day emission factor by 0.8 (24 days/ 30 days).
4. Assume dust 40% duct control factor based on as-needed watering. Does not include any control for winter conditions (frozen ground)

Table 10
Fugitive Dust Emission Factors - Roads

Unpaved Roads - Emission Factor Derivation

$E = k(s/12)^a(W/3)^b$ AP-42 Section 13.2.2 (11/06 version)

where:

E = particulate emission factor (lb/VMT)
k, a, b = empirical constants for industrial roads
s = surface material silt content (%)
W = average vehicle weight (tons)

Parameter	Units	PM_{10}	$PM_{2.5}$	Reference
Mean Vehicle Weight	**tons**	12	12	Assumption
Constant, k	lb/VMT	1.5	0.15	Table 13.2.2-2 (worst case)
Constant, a		0.9	0.9	Table 13.2.2-2 (worst case)
Constant, b		0.45	0.45	Table 13.2.2-2 (worst case)
Silt content, s	%	8.5	8.5	Table 13.2..2-1 (construction sites)
Uncontrolled Emission factor, E	**lb/VMT**	**2.05**	**0.205**	**Calculation**
Control Efficiency for Watering	%	0.65	0.65	Assumption
Controlled Emission factor, E	**lb/VMT**	**0.72**	**0.072**	**Calculation**

Paved Roads - Emission Factor Derivation Table

$E = (k(sL/2)^{0.65}(W/3)^{1.5}-C)$ AP-42 Section 13.2.1 (11/06 version)

where:

E = particulate emission factor (lb/VMT)
k = particle size multiplier
sL = road surface silt loading (g/m^2)
W = average vehicle weight (tons)
C = emission factor for 1980's vehicle fleet exhaust, break wear and tire wear

Parameter	Units	PM_{10}	$PM_{2.5}$	Reference
Mean Vehicle Weight	tons	12	12	Assumption
k factor	lb/VMT	0.016	0.0024	Table 13.2-1.1
Silt Loading, sL	g/m^2	0.6	0.6	Table 13.2.1-3
Emission factor, C	lb/VMT	0.00047	0.00036	Table 13.2.1-2
Uncontrolled Emission factor, E	**lb/VMT**	**0.05805**	**0.008419**	**Calculation**

Table 11-A
Fugitive Dust Emissions from Road (Site and Off-Site) - Phase I

Total Emissions

Fuel Type	Total Overall VMT (VMT)		Emissions (tons)					
			Unpaved Roads		Paved Roads		All Roads	
	Paved Roads	Unpaved Roads	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
Heavy Duty Diesel Trucks	4,740	18,960	1.702	0.170	0.55	0.080	2.25	0.250
Total	-	-	**1.7**	**0.2**	**0.6**	**0.08**	**2.3**	**0.25**

Daily Emissions

Fuel Type	Total Overall VMT (VMT)		Emissions (lbs/day)					
			Unpaved Roads		Paved Roads		All Roads	
	Paved Roads	Unpaved Roads	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
Heavy Duty Diesel Trucks	12,200	48,800	36.5	3.7	11.8	1.7	48.3	5.4
Total	-	-	**36.6**	**3.7**	**11.8**	**1.7**	**48.4**	**5.4**

Table 11-B
Fugitive Dust Emissions from Road (Site and Off-Site) - Phase II

Total Emissions

			Emissions (tons)					
	Total Overall VMT (VMT)		Unpaved Roads		Paved Roads		All Roads	
Fuel Type	**Paved Roads**	**Unpaved Roads**	**PM$_{10}$**	**PM$_{2.5}$**	**PM$_{10}$**	**PM$_{2.5}$**	**PM$_{10}$**	**PM$_{2.5}$**
Heavy Duty Diesel Trucks	4,740	18,960	1.702	0.170	0.55	0.080	2.25	0.250
Total	-	-	**1.7**	**0.2**	**0.6**	**0.08**	**2.3**	**0.25**

Daily Emissions

			Emissions (lbs/day)					
	Total Overall VMT (VMT)		Unpaved Roads		Paved Roads		All Roads	
Fuel Type	**Paved Roads**	**Unpaved Roads**	**PM$_{10}$**	**PM$_{2.5}$**	**PM$_{10}$**	**PM$_{2.5}$**	**PM$_{10}$**	**PM$_{2.5}$**
Heavy Duty Diesel Trucks	12,200	48,800	36.5	3.7	11.8	1.7	48.3	5.4
Total	-	-	**36.6**	**3.7**	**11.8**	**1.7**	**48.4**	**5.4**

SCAB Fleet Average Emission Factors (Diesel)

EF-OFFROAD

Air Basin	SC

		(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
Equipment	**MaxHP**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**CO2**	**CH4**
Aerial Lifts	15	0.0104	0.0529	0.0662	0.0001	0.0037	8.7	0.0009
	25	0.0210	0.0577	0.1013	0.0001	0.0065	11.0	0.0019
	50	0.0756	0.1937	0.1984	0.0003	0.0189	19.6	0.0068
	120	0.0702	0.2501	0.4502	0.0004	0.0361	38.1	0.0063
	500	0.1506	0.5801	1.9198	0.0021	0.0598	213	0.0136
	750	0.2803	1.0486	3.5605	0.0039	0.1096	385	0.0253
Aerial Lifts Composite		0.0670	0.2093	0.3600	0.0004	0.0248	34.7	0.0060
Air Compressors	15	0.0144	0.0513	0.0838	0.0001	0.0061	7.2	0.0013
	25	0.0325	0.0847	0.1397	0.0002	0.0098	14.4	0.0029
	50	0.1163	0.2813	0.2386	0.0003	0.0265	22.3	0.0105
	120	0.1014	0.3351	0.5977	0.0006	0.0545	47.0	0.0091
	175	0.1274	0.5113	1.0082	0.0010	0.0568	88.5	0.0115
	250	0.1225	0.3413	1.3983	0.0015	0.0462	131	0.0111
	500	0.1943	0.6778	2.2062	0.0023	0.0752	232	0.0175
	750	0.3054	1.0476	3.5002	0.0036	0.1179	358	0.0276
	1000	0.5203	1.8591	6.0195	0.0049	0.1809	486	0.0469
Air Compressors Composite		0.1120	0.3613	0.7320	0.0007	0.0526	63.6	0.0101
Bore/Drill Rigs	15	0.0120	0.0632	0.0754	0.0002	0.0031	10.3	0.0011
	25	0.0196	0.0660	0.1257	0.0002	0.0065	16.0	0.0018
	50	0.0545	0.2505	0.2820	0.0004	0.0194	31.0	0.0049
	120	0.0722	0.4812	0.6155	0.0009	0.0456	77.1	0.0065
	175	0.0930	0.7543	0.9148	0.0016	0.0481	141	0.0084
	250	0.0957	0.3460	1.1847	0.0021	0.0384	188	0.0086
	500	0.1488	0.5566	1.7054	0.0031	0.0614	311	0.0134
	750	0.2996	1.0997	3.4821	0.0062	0.1231	615	0.0270
	1000	0.5360	1.7074	8.3092	0.0093	0.2078	928	0.0484
Bore/Drill Rigs Composite		0.1052	0.5146	1.1331	0.0017	0.0498	165	0.0095
Cement and Mortar Mixers	15	0.0079	0.0388	0.0505	0.0001	0.0029	6.3	0.0007
	25	0.0346	0.0942	0.1633	0.0002	0.0107	17.6	0.0031
Cement and Mortar Mixers Composite		0.0101	0.0434	0.0599	0.0001	0.0035	7.2	0.0009
Concrete/Industrial Saws	25	0.0200	0.0678	0.1279	0.0002	0.0063	16.5	0.0018
	50	0.1231	0.3210	0.3070	0.0004	0.0301	30.2	0.0111
	120	0.1342	0.4976	0.8601	0.0009	0.0719	74.1	0.0121
	175	0.1927	0.8786	1.6459	0.0018	0.0864	160	0.0174
Concrete/Industrial Saws Composite		0.1270	0.4273	0.6566	0.0007	0.0552	58.5	0.0115
Cranes	50	0.1284	0.3166	0.2547	0.0003	0.0289	23.2	0.0116
	120	0.1117	0.3723	0.6542	0.0006	0.0602	50.1	0.0101
	175	0.1211	0.4880	0.9302	0.0009	0.0538	80.3	0.0109
	250	0.1243	0.3464	1.2372	0.0013	0.0470	112	0.0112
	500	0.1821	0.6625	1.7722	0.0018	0.0685	180	0.0164
	750	0.3082	1.1113	3.0564	0.0030	0.1166	303	0.0278
	9999	1.0894	4.1317	12.1879	0.0098	0.3792	971	0.0983
Cranes Composite		0.1594	0.5431	1.4515	0.0014	0.0642	129	0.0144
Crawler Tractors	50	0.1446	0.3520	0.2780	0.0003	0.0320	24.9	0.0131
	120	0.1551	0.5018	0.9038	0.0008	0.0819	65.8	0.0140
	175	0.1941	0.7597	1.4788	0.0014	0.0856	121	0.0175
	250	0.2051	0.5743	1.9440	0.0019	0.0784	166	0.0185

SCAB Fleet Average Emission Factors (Diesel)

EF-OFFROAD

Air Basin	SC

		(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
Equipment	**MaxHP**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**CO2**	**CH4**
	500	0.2913	1.1931	2.7255	0.0025	0.1101	259	0.0263
	750	0.5240	2.1290	4.9881	0.0047	0.1989	465	0.0473
	1000	0.7980	3.3726	8.5998	0.0066	0.2810	658	0.0720
Crawler Tractors Composite		0.1861	0.6409	1.3854	0.0013	0.0854	114	0.0168
Crushing/Proc. Equipment	50	0.2271	0.5592	0.4700	0.0006	0.0520	44.0	0.0205
	120	0.1760	0.5956	1.0382	0.0010	0.0960	83.1	0.0159
	175	0.2367	0.9736	1.8607	0.0019	0.1068	167	0.0214
	250	0.2243	0.6225	2.5465	0.0028	0.0841	245	0.0202
	500	0.3091	1.0542	3.4510	0.0037	0.1187	374	0.0279
	750	0.4956	1.6226	5.6506	0.0059	0.1900	589	0.0447
	9999	1.3820	4.8014	16.0752	0.0131	0.4812	1,308	0.1247
Crushing/Proc. Equipment Composite		0.2152	0.7260	1.4394	0.0015	0.0935	132	0.0194
Dumpers/Tenders	25	0.0108	0.0336	0.0645	0.0001	0.0036	7.6	0.0010
Dumpers/Tenders Composite		0.0108	0.0336	0.0645	0.0001	0.0036	7.6	0.0010
Excavators	25	0.0199	0.0677	0.1261	0.0002	0.0057	16.4	0.0018
	50	0.1131	0.3145	0.2638	0.0003	0.0276	25.0	0.0102
	120	0.1398	0.5318	0.8402	0.0009	0.0781	73.6	0.0126
	175	0.1465	0.6701	1.1143	0.0013	0.0663	112	0.0132
	250	0.1451	0.3934	1.4935	0.0018	0.0519	159	0.0131
	500	0.1984	0.6161	1.9285	0.0023	0.0711	234	0.0179
	750	0.3313	1.0196	3.3023	0.0039	0.1198	387	0.0299
Excavators Composite		0.1483	0.5581	1.1502	0.0013	0.0638	120	0.0134
Forklifts	50	0.0666	0.1824	0.1530	0.0002	0.0163	14.7	0.0060
	120	0.0601	0.2243	0.3497	0.0004	0.0342	31.2	0.0054
	175	0.0738	0.3306	0.5540	0.0006	0.0337	56.1	0.0067
	250	0.0652	0.1707	0.7163	0.0009	0.0227	77.1	0.0059
	500	0.0868	0.2343	0.8909	0.0011	0.0307	111	0.0078
Forklifts Composite		0.0686	0.2319	0.5161	0.0006	0.0281	54.4	0.0062
Generator Sets	15	0.0172	0.0726	0.1154	0.0002	0.0069	10.2	0.0016
	25	0.0300	0.1033	0.1705	0.0002	0.0107	17.6	0.0027
	50	0.1117	0.2904	0.3070	0.0004	0.0284	30.6	0.0101
	120	0.1395	0.5054	0.9075	0.0009	0.0714	77.9	0.0126
	175	0.1672	0.7471	1.4780	0.0016	0.0721	142	0.0151
	250	0.1618	0.5018	2.0720	0.0024	0.0618	213	0.0146
	500	0.2305	0.8858	2.9974	0.0033	0.0917	337	0.0208
	750	0.3838	1.4300	4.9646	0.0055	0.1502	544	0.0346
	9999	1.0080	3.6008	12.1384	0.0105	0.3600	1,049	0.0909
Generator Sets Composite		0.0961	0.3293	0.6440	0.0007	0.0396	61.0	0.0087
Graders	50	0.1400	0.3584	0.2961	0.0004	0.0323	27.5	0.0126
	120	0.1553	0.5459	0.9268	0.0009	0.0849	75.0	0.0140
	175	0.1743	0.7409	1.3532	0.0014	0.0783	124	0.0157
	250	0.1761	0.4934	1.7904	0.0019	0.0662	172	0.0159
	500	0.2149	0.7523	2.1198	0.0023	0.0807	229	0.0194
	750	0.4580	1.5877	4.6098	0.0049	0.1729	486	0.0413
Graders Composite		0.1723	0.6314	1.4338	0.0015	0.0753	133	0.0155
Off-Highway Tractors	120	0.2457	0.7439	1.4200	0.0011	0.1255	93.7	0.0222
	175	0.2326	0.8561	1.7665	0.0015	0.1014	130	0.0210

SCAB Fleet Average Emission Factors (Diesel)

EF-OFFROAD

Air Basin	SC

		(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
Equipment	**MaxHP**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**CO2**	**CH4**
	250	0.1881	0.5347	1.7050	0.0015	0.0735	130	0.0170
	750	0.7400	3.5496	6.8440	0.0057	0.2854	568	0.0668
	1000	1.1197	5.5155	11.4633	0.0082	0.4009	814	0.1010
Off-Highway Tractors Composite		0.2368	0.8385	1.9897	0.0017	0.0974	151	0.0214
Off-Highway Trucks	175	0.1732	0.7625	1.2796	0.0014	0.0771	125	0.0156
	250	0.1639	0.4301	1.6150	0.0019	0.0574	167	0.0148
	500	0.2492	0.7542	2.3188	0.0027	0.0872	272	0.0225
	750	0.4069	1.2210	3.8814	0.0044	0.1436	442	0.0367
	1000	0.6440	2.0615	7.3260	0.0063	0.2219	625	0.0581
Off-Highway Trucks Composite		0.2480	0.7429	2.3885	0.0027	0.0875	260	0.0224
Other Construction Equipment	15	0.0118	0.0617	0.0737	0.0002	0.0030	10.1	0.0011
	25	0.0162	0.0545	0.1039	0.0002	0.0053	13.2	0.0015
	50	0.1033	0.2930	0.2787	0.0004	0.0263	28.0	0.0093
	120	0.1320	0.5419	0.8649	0.0009	0.0740	80.9	0.0119
	175	0.1168	0.5901	0.9927	0.0012	0.0543	107	0.0105
	500	0.1705	0.6068	1.9821	0.0025	0.0678	254	0.0154
Other Construction Equipment Composite		0.1056	0.4108	1.0117	0.0013	0.0442	123	0.0095
Other General Industrial Equipmen	15	0.0066	0.0391	0.0466	0.0001	0.0017	6.4	0.0006
	25	0.0186	0.0632	0.1177	0.0002	0.0054	15.3	0.0017
	50	0.1281	0.3073	0.2413	0.0003	0.0285	21.7	0.0116
	120	0.1459	0.4647	0.8218	0.0007	0.0795	62.0	0.0132
	175	0.1516	0.5816	1.1364	0.0011	0.0676	95.9	0.0137
	250	0.1400	0.3676	1.5016	0.0015	0.0509	136	0.0126
	500	0.2500	0.8031	2.6018	0.0026	0.0919	265	0.0226
	750	0.4153	1.3236	4.4083	0.0044	0.1538	437	0.0375
	1000	0.6374	2.2063	7.1530	0.0056	0.2212	560	0.0575
Other General Industrial Equipmen Composite		0.1847	0.5948	1.6649	0.0016	0.0740	152	0.0167
Other Material Handling Equipmen	50	0.1773	0.4246	0.3355	0.0004	0.0395	30.3	0.0160
	120	0.1417	0.4524	0.8014	0.0007	0.0772	60.7	0.0128
	175	0.1914	0.7367	1.4429	0.0014	0.0856	122	0.0173
	250	0.1481	0.3917	1.6024	0.0016	0.0542	145	0.0134
	500	0.1782	0.5784	1.8750	0.0019	0.0660	192	0.0161
	9999	0.8390	2.9174	9.4509	0.0073	0.2912	741	0.0757
Other Material Handling Equipment Composite		0.1773	0.5556	1.6150	0.0015	0.0715	141	0.0160
Pavers	25	0.0278	0.0845	0.1603	0.0002	0.0092	18.7	0.0025
	50	0.1624	0.3860	0.3110	0.0004	0.0356	28.0	0.0147
	120	0.1638	0.5223	0.9693	0.0008	0.0853	69.2	0.0148
	175	0.2049	0.7959	1.6028	0.0014	0.0903	128	0.0185
	250	0.2426	0.7011	2.3337	0.0022	0.0953	194	0.0219
	500	0.2622	1.1661	2.5319	0.0023	0.1023	233	0.0237
Pavers Composite		0.1774	0.5644	0.9868	0.0009	0.0709	77.9	0.0160
Paving Equipment	25	0.0155	0.0521	0.0993	0.0002	0.0051	12.6	0.0014
	50	0.1384	0.3277	0.2654	0.0003	0.0303	23.9	0.0125
	120	0.1282	0.4084	0.7600	0.0006	0.0668	54.5	0.0116
	175	0.1599	0.6208	1.2577	0.0011	0.0704	101	0.0144
	250	0.1506	0.4363	1.4619	0.0014	0.0592	122	0.0136
Paving Equipment Composite		0.1336	0.4478	0.8963	0.0008	0.0629	68.9	0.0121

SCAB Fleet Average Emission Factors (Diesel)

EF-OFFROAD

Air Basin	SC

		(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
Equipment	**MaxHP**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**CO2**	**CH4**
Plate Compactors	15	0.0050	0.0263	0.0317	0.0001	0.0015	4.3	0.0005
Plate Compactors Composite		0.0050	0.0263	0.0317	0.0001	0.0015	4.3	0.0005
Pressure Washers	15	0.0083	0.0348	0.0553	0.0001	0.0033	4.9	0.0007
	25	0.0122	0.0419	0.0691	0.0001	0.0043	7.1	0.0011
	50	0.0413	0.1143	0.1388	0.0002	0.0115	14.3	0.0037
	120	0.0388	0.1487	0.2674	0.0003	0.0193	24.1	0.0035
Pressure Washers Composite		0.0199	0.0666	0.0989	0.0001	0.0070	9.4	0.0018
Pumps	15	0.0148	0.0528	0.0862	0.0001	0.0062	7.4	0.0013
	25	0.0439	0.1142	0.1884	0.0002	0.0133	19.5	0.0040
	50	0.1339	0.3428	0.3479	0.0004	0.0333	34.3	0.0121
	120	0.1441	0.5136	0.9216	0.0009	0.0744	77.9	0.0130
	175	0.1709	0.7489	1.4815	0.0016	0.0742	140	0.0154
	250	0.1593	0.4846	1.9941	0.0023	0.0609	201	0.0144
	500	0.2450	0.9411	3.1080	0.0034	0.0973	345	0.0221
	750	0.4167	1.5559	5.2721	0.0057	0.1631	571	0.0376
	9999	1.3269	4.8008	15.8590	0.0136	0.4723	1,355	0.1197
Pumps Composite		0.0936	0.3096	0.5545	0.0006	0.0393	49.6	0.0084
Rollers	15	0.0074	0.0386	0.0461	0.0001	0.0019	6.3	0.0007
	25	0.0164	0.0551	0.1049	0.0002	0.0054	13.3	0.0015
	50	0.1270	0.3169	0.2753	0.0003	0.0292	26.0	0.0115
	120	0.1201	0.4177	0.7383	0.0007	0.0641	59.0	0.0108
	175	0.1478	0.6270	1.2022	0.0012	0.0659	108	0.0133
	250	0.1542	0.4540	1.6232	0.0017	0.0603	153	0.0139
	500	0.1987	0.7785	2.0882	0.0022	0.0783	219	0.0179
Rollers Composite		0.1176	0.4212	0.7749	0.0008	0.0547	67.1	0.0106
Rough Terrain Forklifts	50	0.1590	0.4186	0.3558	0.0004	0.0377	33.9	0.0143
	120	0.1213	0.4447	0.7326	0.0007	0.0676	62.4	0.0109
	175	0.1640	0.7302	1.2875	0.0014	0.0749	125	0.0148
	250	0.1523	0.4270	1.6632	0.0019	0.0567	171	0.0137
	500	0.2097	0.6871	2.1987	0.0025	0.0788	257	0.0189
Rough Terrain Forklifts Composite		0.1272	0.4766	0.7988	0.0008	0.0678	70.3	0.0115
Rubber Tired Dozers	175	0.2398	0.8686	1.7881	0.0015	0.1036	129	0.0216
	250	0.2776	0.7758	2.4482	0.0021	0.1071	183	0.0250
	500	0.3621	1.7411	3.2071	0.0026	0.1370	265	0.0327
	750	0.5457	2.6075	4.9024	0.0040	0.2071	399	0.0492
	1000	0.8464	4.1786	8.4813	0.0060	0.3018	592	0.0764
Rubber Tired Dozers Composite		0.3379	1.4127	2.9891	0.0025	0.1288	239	0.0305
Rubber Tired Loaders	25	0.0206	0.0697	0.1314	0.0002	0.0064	16.9	0.0019
	50	0.1560	0.4005	0.3333	0.0004	0.0361	31.1	0.0141
	120	0.1206	0.4268	0.7227	0.0007	0.0660	58.9	0.0109
	175	0.1476	0.6326	1.1513	0.0012	0.0664	106	0.0133
	250	0.1493	0.4210	1.5357	0.0017	0.0563	149	0.0135
	500	0.2172	0.7648	2.1684	0.0023	0.0819	237	0.0196
	750	0.4484	1.5625	4.5660	0.0049	0.1700	486	0.0405
	1000	0.6154	2.2308	7.1368	0.0060	0.2156	594	0.0555
Rubber Tired Loaders Composite		0.1440	0.5078	1.1537	0.0012	0.0651	109	0.0130
Scrapers	120	0.2236	0.7169	1.3034	0.0011	0.1177	93.9	0.0202

SCAB Fleet Average Emission Factors (Diesel)

EF-OFFROAD

Air Basin	SC

		(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
Equipment	**MaxHP**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**CO2**	**CH4**
	175	0.2391	0.9290	1.8284	0.0017	0.1053	148	0.0216
	250	0.2618	0.7368	2.4818	0.0024	0.1006	209	0.0236
	500	0.3650	1.5182	3.4250	0.0032	0.1386	321	0.0329
	750	0.6328	2.6115	6.0373	0.0056	0.2413	555	0.0571
Scrapers Composite		0.3202	1.2424	2.9078	0.0027	0.1256	262	0.0289
Signal Boards	15	0.0072	0.0377	0.0450	0.0001	0.0017	6.2	0.0006
	50	0.1492	0.3827	0.3689	0.0005	0.0364	36.2	0.0135
	120	0.1495	0.5380	0.9446	0.0009	0.0792	80.2	0.0135
	175	0.1907	0.8437	1.6203	0.0017	0.0846	155	0.0172
	250	0.2049	0.6138	2.5094	0.0029	0.0789	255	0.0185
Signal Boards Composite		0.0224	0.0953	0.1615	0.0002	0.0091	16.7	0.0020
Skid Steer Loaders	25	0.0249	0.0700	0.1252	0.0002	0.0079	13.8	0.0022
	50	0.0785	0.2507	0.2463	0.0003	0.0217	25.5	0.0071
	120	0.0607	0.2822	0.4131	0.0005	0.0355	42.8	0.0055
Skid Steer Loaders Composite		0.0692	0.2489	0.2919	0.0004	0.0252	30.3	0.0062
Surfacing Equipment	50	0.0589	0.1520	0.1451	0.0002	0.0142	14.1	0.0053
	120	0.1192	0.4334	0.7683	0.0007	0.0624	63.8	0.0108
	175	0.1071	0.4787	0.9169	0.0010	0.0472	85.8	0.0097
	250	0.1254	0.3883	1.3783	0.0015	0.0494	135	0.0113
	500	0.1854	0.7785	2.0517	0.0022	0.0741	221	0.0167
	750	0.2960	1.2171	3.2929	0.0035	0.1173	347	0.0267
Surfacing Equipment Composite		0.1550	0.6164	1.5685	0.0017	0.0606	166	0.0140
Sweepers/Scrubbers	15	0.0124	0.0729	0.0870	0.0002	0.0033	11.9	0.0011
	25	0.0239	0.0808	0.1524	0.0002	0.0075	19.6	0.0022
	50	0.1508	0.3893	0.3297	0.0004	0.0355	31.6	0.0136
	120	0.1490	0.5329	0.8645	0.0009	0.0843	75.0	0.0134
	175	0.1856	0.8049	1.4276	0.0016	0.0854	139	0.0167
	250	0.1344	0.3643	1.5598	0.0018	0.0489	162	0.0121
Sweepers/Scrubbers Composite		0.1548	0.5380	0.8473	0.0009	0.0686	78.5	0.0140
Tractors/Loaders/Backhoes	25	0.0214	0.0681	0.1317	0.0002	0.0072	15.9	0.0019
	50	0.1257	0.3548	0.3114	0.0004	0.0312	30.3	0.0113
	120	0.0910	0.3623	0.5664	0.0006	0.0515	51.7	0.0082
	175	0.1216	0.5881	0.9646	0.0011	0.0562	101	0.0110
	250	0.1418	0.4037	1.5493	0.0019	0.0523	172	0.0128
	500	0.2630	0.8495	2.7242	0.0039	0.0980	345	0.0237
	750	0.3986	1.2725	4.2276	0.0058	0.1496	517	0.0360
Tractors/Loaders/Backhoes Composite		0.1021	0.3930	0.6747	0.0008	0.0521	66.8	0.0092
Trenchers	15	0.0099	0.0517	0.0617	0.0001	0.0023	8.5	0.0009
	25	0.0400	0.1355	0.2555	0.0004	0.0125	32.9	0.0036
	50	0.1837	0.4365	0.3620	0.0004	0.0405	32.9	0.0166
	120	0.1509	0.4840	0.9082	0.0008	0.0776	64.9	0.0136
	175	0.2254	0.8843	1.7973	0.0016	0.0990	144	0.0203
	250	0.2770	0.8161	2.6802	0.0025	0.1103	223	0.0250
	500	0.3468	1.6352	3.4013	0.0031	0.1373	311	0.0313
	750	0.6586	3.0677	6.5218	0.0059	0.2602	587	0.0594
Trenchers Composite		0.1675	0.4907	0.7598	0.0007	0.0637	58.7	0.0151
Welders	15	0.0124	0.0441	0.0720	0.0001	0.0052	6.2	0.0011

SCAB Fleet Average Emission Factors (Diesel)

EF-OFFROAD

Air Basin	SC

		(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
Equipment	MaxHP	ROG	CO	NOX	SOX	PM	CO2	CH4
	25	0.0254	0.0661	0.1091	0.0001	0.0077	11.3	0.0023
	50	0.1231	0.3025	0.2724	0.0003	0.0287	26.0	0.0111
	120	0.0807	0.2738	0.4899	0.0005	0.0428	39.5	0.0073
	175	0.1333	0.5515	1.0896	0.0011	0.0590	98.2	0.0120
	250	0.1052	0.3022	1.2367	0.0013	0.0400	119	0.0095
	500	0.1327	0.4823	1.5648	0.0016	0.0520	168	0.0120
Welders Composite		0.0805	0.2246	0.2920	0.0003	0.0270	25.6	0.0073

Highest (Most Conservative) EMFAC2007 (version 2.3) Emission Factors for On-Road Heavy-Heavy-Duty Diesel Trucks

Projects in the SCAQMD (Scenario Years 2007 - 2026)
Derived from Peak Emissions Inventory (**Winter**, **Annual**, Summer)

Vehicle Class:
Heavy-Heavy-Duty Diesel Trucks (33,001 to 60,000 pounds)

The following emission factors were compiled by running the California Air Resources Board's EMFAC2007 (version 2.3) Burden Model and extracting the **Heavy-Heavy-Duty Diesel Truck (HHDT)** Emission Factors.

These emission factors can be used to calculate on-road mobile source emissions for the vehicle/emission categories listed in the tables below, by use of the following equation:

Emissions (pounds per day) = N x TL x EF

where N = number of trips, TL = trip length (miles/day), and EF = emission factor (pounds per mile)

The **HHDT-DSL** vehicle/emission category accounts for all emissions from heavy-heavy-duty diesel trucks, including start, running and idling exhaust. In addition, ROG emission factors account for diurnal, hot soak, running and resting emissions, and the PM10 & PM2.5 emission factors account for tire and brake wear.

The **HHDT-DSL, Exh** vehicle/emission category includes only the exhaust portion of PM10 & PM2.5 emissions from heavy-heavy-duty diesel trucks.

Scenario Year: **2007**
All model years in the range 1965 to 2007

HHDT-DSL (pounds/mile)	
CO	**0.01446237**
NOx	**0.04718166**
ROG	**0.00372949**
SOx	**0.00003962**
PM10	**0.00230900**
PM2.5	**0.00204018**
CO2	4.22184493

HHDT-DSL, Exh (pounds/mile)	
PM10	**0.00216752**
PM2.5	**0.00199491**

Scenario Year: **2008**
All model years in the range 1965 to 2008

HHDT-DSL (pounds/mile)	
CO	**0.01361368**
NOx	**0.04458017**
ROG	**0.00351579**
SOx	**0.00004136**
PM10	**0.00215635**
PM2.5	**0.00189990**
CO2	4.21067145
CH4	**0.00016269**

HHDT-DSL, Exh (pounds/mile)	
PM10	**0.00201296**
PM2.5	**0.00185303**

Scenario Year: **2009**
All model years in the range 1965 to 2009

HHDT-DSL (pounds/mile)	
CO	**0.01282236**
NOx	**0.04184591**
ROG	**0.00329320**
SOx	**0.00004013**
PM10	**0.00199572**
PM2.5	**0.00175227**
CO2	4.21080792
CH4	**0.00015249**

HHDT-DSL, Exh (pounds/mile)	
PM10	**0.00185393**
PM2.5	**0.00170680**

Scenario Year: **2010**
All model years in the range 1966 to 2010

HHDT-DSL (pounds/mile)	
CO	**0.01195456**
NOx	**0.03822102**
ROG	**0.00304157**
SOx	**0.00004131**
PM10	**0.00183062**
PM2.5	**0.00160083**
CO2	4.21120578
CH4	**0.00014201**

HHDT-DSL, Exh (pounds/mile)	
PM10	**0.00168861**
PM2.5	**0.00155435**

Highest (Most Conservative) EMFAC2007 (version 2.3) Emission Factors for On-Road Heavy-Heavy-Duty Diesel Trucks

Projects in the SCAQMD (Scenario Years 2007 - 2026)
Derived from Peak Emissions Inventory (**Winter**, **Annual**, **Summer**)

Vehicle Class:
Heavy-Heavy-Duty Diesel Trucks (33,001 to 60,000 pounds)

Scenario Year: **2011**

All model years in the range 1967 to 2011

HHDT-DSL (pounds/mile)	
CO	**0.01112463**
NOx	**0.03455809**
ROG	**0.00279543**
SOx	**0.00003972**
PM10	**0.00166087**
PM2.5	**0.00144489**
CO2	**4.22045680**
CH4	**0.00012910**

HHDT-DSL, Exh (pounds/mile)	
PM10	**0.00151936**
PM2.5	**0.00139772**

Scenario Year: **2012**

All model years in the range 1968 to 2012

HHDT-DSL (pounds/mile)	
CO	**0.01021519**
NOx	**0.03092379**
ROG	**0.00252764**
SOx	**0.00004042**
PM10	**0.00149566**
PM2.5	**0.00129354**
CO2	**4.21590774**
CH4	**0.00011651**

HHDT-DSL, Exh (pounds/mile)	
PM10	**0.00135537**
PM2.5	**0.00124837**

Scenario Year: **2013**

All model years in the range 1969 to 2013

HHDT-DSL (pounds/mile)	
CO	**0.00931790**
NOx	**0.02742935**
ROG	**0.00226308**
SOx	**0.00004086**
PM10	**0.00133697**
PM2.5	**0.00114629**
CO2	**4.21518556**
CH4	**0.00010441**

HHDT-DSL, Exh (pounds/mile)	
PM10	**0.00119623**
PM2.5	**0.00109863**

Scenario Year: **2014**

All model years in the range 1970 to 2014

HHDT-DSL (pounds/mile)	
CO	**0.00846435**
NOx	**0.02418049**
ROG	**0.00201594**
SOx	**0.00004092**
PM10	**0.00118458**
PM2.5	**0.00100582**
CO2	**4.21279345**
CH4	**0.00009261**

HHDT-DSL, Exh (pounds/mile)	
PM10	**0.00104243**
PM2.5	**0.00096059**

Scenario Year: **2015**

All model years in the range 1971 to 2015

HHDT-DSL (pounds/mile)	
CO	**0.00766891**
NOx	**0.02122678**
ROG	**0.00178608**
SOx	**0.00004082**
PM10	**0.00104715**
PM2.5	**0.00087977**
CO2	**4.20902225**
CH4	**0.00008369**

HHDT-DSL, Exh (pounds/mile)	
PM10	**0.00090631**
PM2.5	**0.00083282**

Scenario Year: **2016**

All model years in the range 1972 to 2016

HHDT-DSL (pounds/mile)	
CO	**0.00704604**
NOx	**0.01887374**
ROG	**0.00161035**
SOx	**0.00003952**
PM10	**0.00094448**
PM2.5	**0.00078443**
CO2	**4.21063031**
CH4	**0.00007508**

HHDT-DSL, Exh (pounds/mile)	
PM10	**0.00080419**
PM2.5	**0.00073898**

Highest (Most Conservative) EMFAC2007 (version 2.3) Emission Factors for On-Road Heavy-Heavy-Duty Diesel Trucks

Projects in the SCAQMD (Scenario Years 2007 - 2026)
Derived from Peak Emissions Inventory (**Winter**, **Annual**, Summer)

Vehicle Class:
Heavy-Heavy-Duty Diesel Trucks (33,001 to 60,000 pounds)

Scenario Year: **2017**

All model years in the range 1973 to 2017

HHDT-DSL (pounds/mile)	
CO	0.00650533
NOx	0.01690387
ROG	0.00145203
SOx	0.00004033
PM10	0.00084894
PM2.5	0.00069721
CO2	4.20820129
CH4	0.00006722

HHDT-DSL, Exh (pounds/mile)	
PM10	0.00070873
PM2.5	0.00065111

Scenario Year: **2018**

All model years in the range 1974 to 2018

HHDT-DSL (pounds/mile)	
CO	0.00604721
NOx	0.01526414
ROG	0.00131697
SOx	0.00003934
PM10	0.00076808
PM2.5	0.00062383
CO2	4.20756838
CH4	0.00006182

HHDT-DSL, Exh (pounds/mile)	
PM10	0.00062758
PM2.5	0.00057700

Scenario Year: **2019**

All model years in the range 1975 to 2019

HHDT-DSL (pounds/mile)	
CO	0.00565433
NOx	0.01389113
ROG	0.00120235
SOx	0.00004032
PM10	0.00070198
PM2.5	0.00056085
CO2	4.20637830
CH4	0.00005499

HHDT-DSL, Exh (pounds/mile)	
PM10	0.00056085
PM2.5	0.00051320

Scenario Year: **2020**

All model years in the range 1976 to 2020

HHDT-DSL (pounds/mile)	
CO	0.00532242
NOx	0.01274755
ROG	0.00110621
SOx	0.00003957
PM10	0.00064574
PM2.5	0.00050904
CO2	4.20541416
CH4	0.00005216

HHDT-DSL, Exh (pounds/mile)	
PM10	0.00050364
PM2.5	0.00046227

Scenario Year: **2021**

All model years in the range 1977 to 2021

HHDT-DSL (pounds/mile)	
CO	0.00503726
NOx	0.01179977
ROG	0.00103095
SOx	0.00004033
PM10	0.00059437
PM2.5	0.00046287
CO2	4.21495573
CH4	0.00004734

HHDT-DSL, Exh (pounds/mile)	
PM10	0.00045411
PM2.5	0.00041729

Scenario Year: **2022**

All model years in the range 1978 to 2022

HHDT-DSL (pounds/mile)	
CO	0.00478830
NOx	0.01098794
ROG	0.00096142
SOx	0.00004106
PM10	0.00055427
PM2.5	0.00042597
CO2	4.21520828
CH4	0.00004448

HHDT-DSL, Exh (pounds/mile)	
PM10	0.00041399
PM2.5	0.00037807

Highest (Most Conservative) EMFAC2007 (version 2.3) Emission Factors for On-Road Heavy-Heavy-Duty Diesel Trucks

Projects in the SCAQMD (Scenario Years 2007 - 2026)
Derived from Peak Emissions Inventory (**Winter**, **Annual**, **Summer**)

Vehicle Class:
Heavy-Heavy-Duty Diesel Trucks (33,001 to 60,000 pounds)

Scenario Year: **2023**
All model years in the range 1979 to 2023

HHDT-DSL (pounds/mile)	
CO	**0.00457902**
NOx	**0.01031407**
ROG	**0.00090210**
SOx	**0.00004009**
PM10	**0.00052122**
PM2.5	**0.00039592**
CO2	4.21483461
CH4	**0.00004176**

HHDT-DSL, Exh (pounds/mile)	
PM10	**0.00037922**
PM2.5	**0.00034915**

Scenario Year: **2024**
All model years in the range 1980 to 2024

HHDT-DSL (pounds/mile)	
CO	**0.00444444**
NOx	**0.00974372**
ROG	**0.00084009**
SOx	**0.00003930**
PM10	**0.00050766**
PM2.5	**0.00038320**
CO2	4.19552935
CH4	**0.00003930**

HHDT-DSL, Exh (pounds/mile)	
PM10	**0.00036682**
PM2.5	**0.00033735**

Scenario Year: **2025**
All model years in the range 1981 to 2025

HHDT-DSL (pounds/mile)	
CO	**0.00431086**
NOx	**0.00932573**
ROG	**0.00080206**
SOx	**0.00004018**
PM10	**0.00048541**
PM2.5	**0.00036326**
CO2	4.19512979
CH4	**0.00003697**

HHDT-DSL, Exh (pounds/mile)	
PM10	**0.00034397**
PM2.5	**0.00031664**

Scenario Year: **2026**
All model years in the range 1982 to 2026

HHDT-DSL (pounds/mile)	
CO	**0.00420297**
NOx	**0.00898990**
ROG	**0.00077178**
SOx	**0.00003946**
PM10	**0.00046717**
PM2.5	**0.00034564**
CO2	4.19349747
CH4	**0.00003630**

HHDT-DSL, Exh (pounds/mile)	
PM10	**0.00032670**
PM2.5	**0.00029830**

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Appendix C
Biological Assessment

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DRAFT

BIOLOGICAL ASSESSMENT
FOR THE CHEVRON SOLAR PROJECT SITE
LUCERNE VALLEY, CALIFORNIA

Prepared for:

Mr. Christopher Otahal
BUREAU OF LAND MANAGEMENT
Barstow Field Office
2601 Barstow Road
Barstow, CA 92311

Prepared by:

CHAMBERS GROUP, INC.
5 Hutton Centre Drive, Suite 750
Santa Ana, CA 92707

September 2009

EXECUTIVE SUMMARY

Chevron Energy Solutions (CES) and its development partners propose to design, construct, operate, and maintain a solar photovoltaic generating station in Lucerne Valley (Project) to meet the needs of California utilities for new renewable energy. The Chevron Solar Project site, comprising approximately 516 acres, is located on Bureau of Land Management lands just south of CA-247, approximately eight miles east of the junction of Barstow Road and Old Woman Springs Road in San Bernardino County, California (Figure 1). The Project includes construction of a solar field, control and maintenance building,, and substation. Construction is scheduled to begin in 2010.

The Federally threatened or endangered species potentially within the project area are included in the table below.

Species (Common/*Latin*)	Listing Status	Determination
desert tortoise *Gopherus agassizil*	Threatened	May affect, likely to adversely affect

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SECTION 1.0 – INTRODUCTION

1.1. PROJECT PURPOSE

The purpose of this Project is to build a solar photovoltaic site located in Lucerne Valley. Construction is scheduled to begin in 2010. California utilities will need in excess of 50,000 gigawatts per year (GW/yr) of new renewable energy generation capability over the next 10 years to meet the State's renewable energy mandate. It is expected that at least 5,000 megawatts (MW) of new solar power will be required to meet this need and that this amount could grow to nearly 10,000 MW. The proposed Project will supply renewable energy to meet these important mid- and long-term needs. In an effort to meet this need, Chevron Energy Solutions (CES) and its development partners propose to design, construct, operate, and maintain a 45 MW photovoltaic generating station, interconnecting to Southern California Edison's (SCE) 33 kilovolts (kV) distribution system. CES selected this Bureau of Land Management (BLM) site for its excellent solar radiation, proximity to potential customers, access to existing electric transmission, and relatively low environmental impact. The Project Right-of-Way (ROW) encompasses the solar field, control and maintenance building, and substation, for a total Project footprint of approximately 516 acres.

1.2. PURPOSE OF THE BIOLOGICAL ASSESSMENT

The purpose of this Biological Assessment (BA) is to provide the necessary information to the U.S. Fish and Wildlife Service (USFWS) to issue a Biological Opinion (BO) to the BLM on the effects of CES's proposed 516-acre Project. Project activities are proposed to take place in a BLM ROW consisting of open space and previously disturbed access roads. Detailed Project descriptions are included in Section 2. A Draft Environmental Impact Statement that has been prepared to describe the Project features includes a detailed biological report. The objective of this BA is to provide USFWS information that will assist in determining the potential effect of the proposed action on the federally-threatened desert tortoise (*Gopherus agassizii*) and its critical habitat. No other federally-listed species or habitats are known to occur within the Project area. This BA was prepared in accordance with legal requirements set forth under Section 7 of the Endangered Species Act of 1973, as amended (16 USC 1536 [c]).

SECTION 2.0 – PROJECT DESCRIPTION

This section provides a detailed description of the proposed action, including the Project description, Project components, construction methods and processes, operations, and maintenance.

2.1. PROJECT LOCATION

The Chevron Solar Project site, comprising approximately 516 acres, is located on BLM lands just south of CA-247, approximately eight miles east of the junction of Barstow Road and Old Woman Springs Road, east of the community of Lucerne Valley in San Bernardino County, California (Figure 1). The site is located south of Foothill Road and is bordered by Donaldson Road on the west and a drainage that runs approximately 1,300 feet east of Santa Fe Fire Road on the east. The site is within the U.S. Geological Survey (USGS) Cougar Buttes, California 7.5-minute topographic quadrangle in Sections 19, 20, 29, and 30 of Township 4 North, Range 2 East and in Section 24 of Township 4 North, Range 1 East (Figure 2). The elevation range at the site is between approximately 3,000 and 3,120 feet above mean sea level (amsl).

2.2. DEFINITION OF ACTION AREA

The Project Action Area is defined as the same area as the Project footprint and Santa Fe Fire Road, which will be used for the mobilization and transportation of any construction or worker vehicles to gain access to the Project site. This also accounts for potential operations and maintenance activities related to the existing power lines to the north side of Foothill Road into which this Project ties.

2.3. DESCRIPTION OF THE PROPOSED ACTION

The proposed action is to build a phased construction, 45 MW, photovoltaic power plant on the Project site. The first phase will be 20 MW beginning construction in late 2010. The remaining phase of approximately 25 MW is dependent upon the availability of transmission capacity. The second phase may begin construction as early as late 2011. Construction will generally follow the sequence of staking/flagging the perimeter of the Project area (5 days), construction of desert tortoise and security fencing (5 days), access roads (5 days), site grading (25 days), assembly and installation of all Project facilities (190 days), cleanup, and site reclamation of any temporary work areas (10 days). CES expects the construction period to be approximately eight months for each phase.

The construction of Project facilities will involve preparing the site surface and building drainage and storm water diversion systems, access roads, and maintenance tracks. After site grading, underground electrical conduit is installed, then panel frames are assembled. The photovoltaic panels are then set onto and secured to the frames. DC wiring harnesses are then routed to collector boxes and on to the inverters. From the high side of the step up transformers, an underground/overhead 33 kV collector system will carry the power generated by the solar field to the onsite switchyard.

Figure 1 Project Vicinity Map

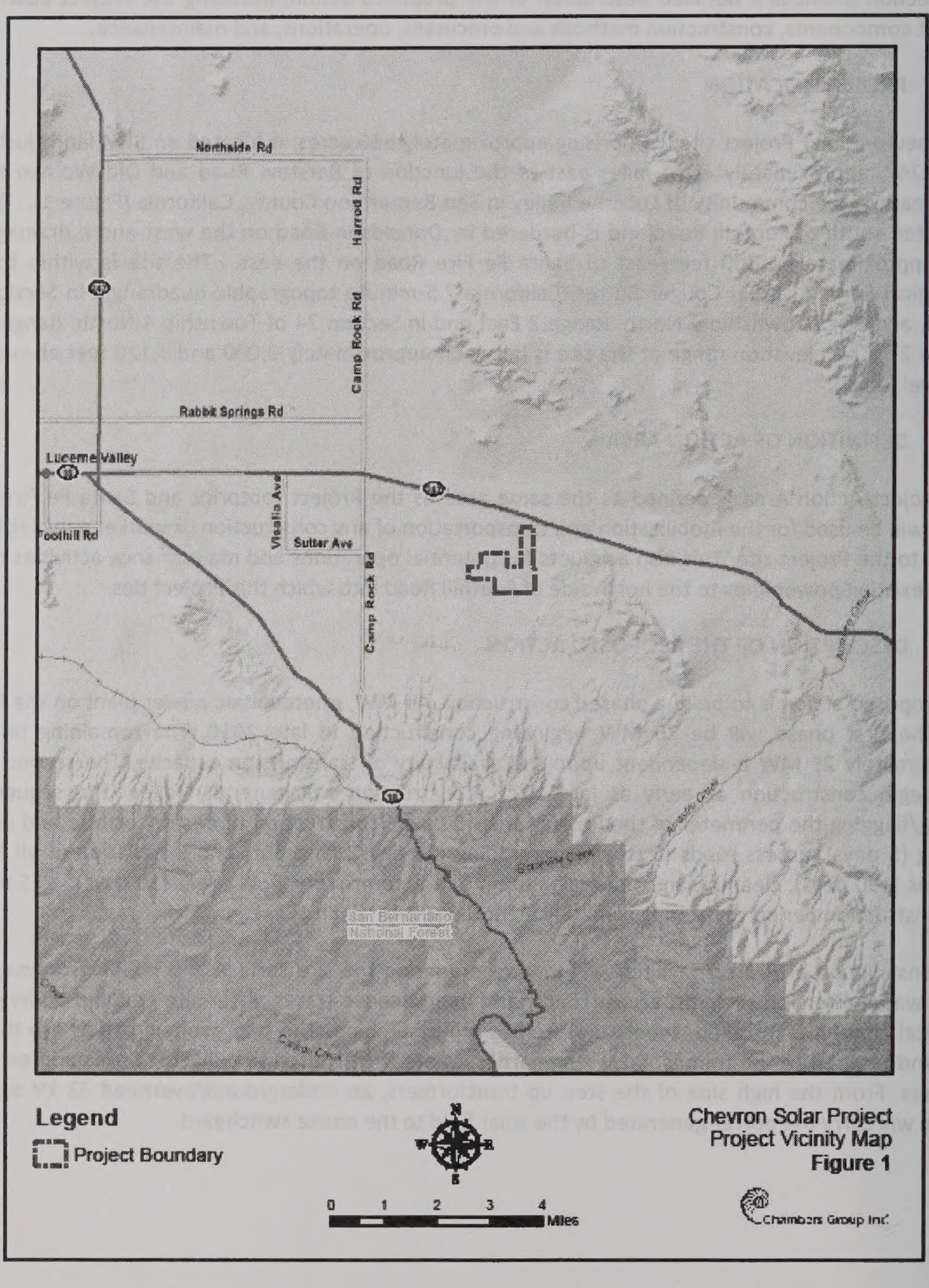

Figure 2 Project Location Map

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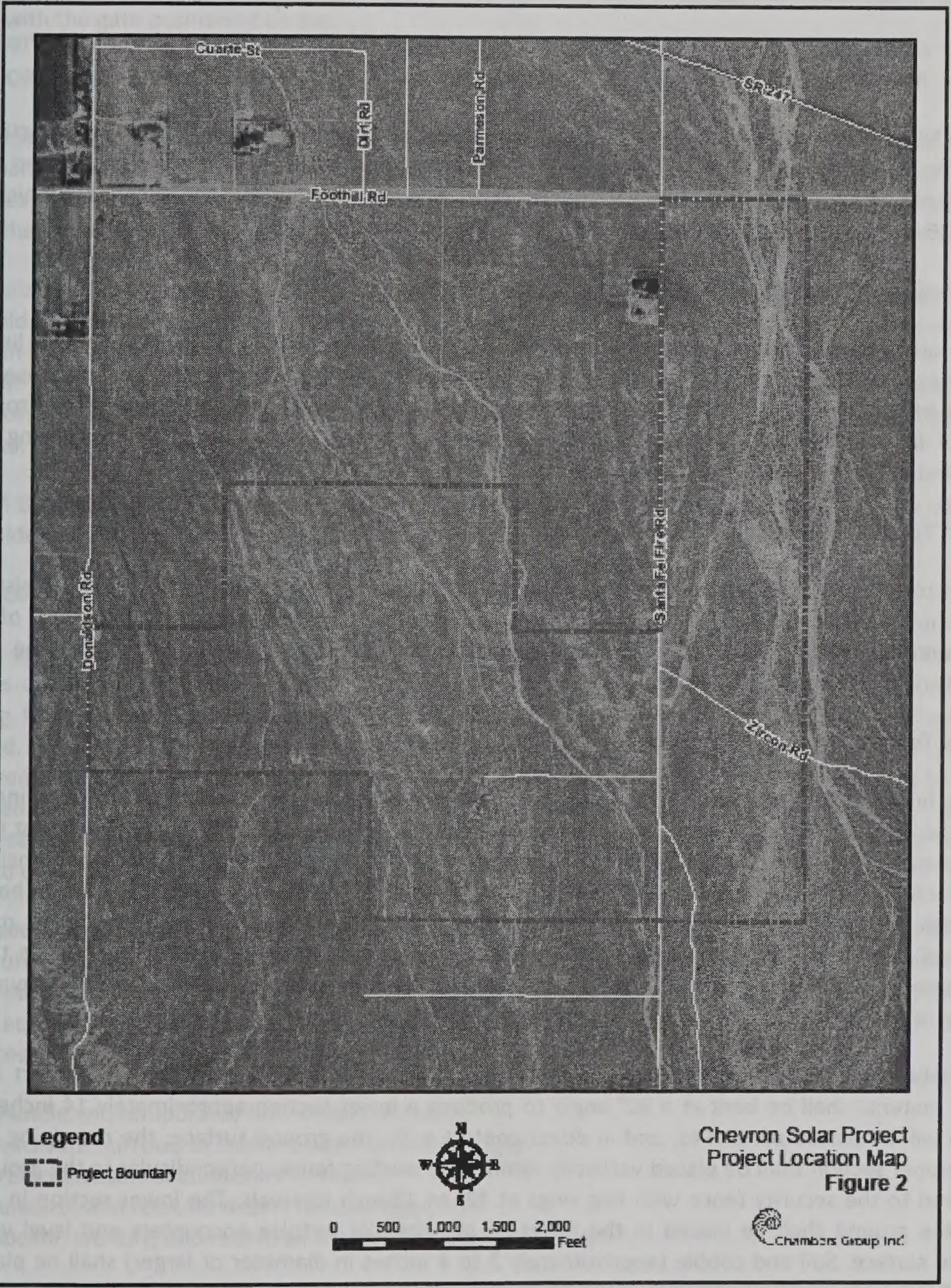


Cougar Buttes 7.5 minute USGS Quad Map
Sections 19, 20, 29, & 30, Township 4N, Range 2E

2.3.1 Vehicles and Equipment

Use of a variety of equipment is expected in order to accomplish installation of the solar Project site facility. All equipment shall be confined to the roadways and Project ROW.

Up to 59 vehicles are estimated to drive in and out of the Project site during construction activities in addition to approximately 20 personal vehicles. A total of five personal vehicles are estimated to drive in and out of the Project site daily during operation and maintenance (O&M) activities. Vehicles shall drive 20 miles per hour or less, in accordance with desert tortoise protection measures.

2.3.2 Security and Desert Tortoise Exclusionary Fence Installation

Site control will be limited to the area under construction. The security fencing will be initially limited to the area appropriate for phase one (approximately 200 acres). Once the second phase begins construction, security fencing will be expanded to fit the entire site. The perimeter of the Project site will be fenced with an eight-foot high security fence. Desert tortoise exclusionary fencing will be attached to security fencing and will meet standards developed by the USFWS.

Desert Tortoise Exclusionary Fence Materials

Desert tortoise fences shall be constructed with 16-gauge or heavier materials suitable to resist desert environments, alkaline and acidic soils, wind, and erosion. Fence material shall consist of 1-inch horizontal by 2-inch vertical, galvanized welded wire, 36 inches in height. Hog rings shall be used to attach the fence material to the security fence.

Desert Tortoise Fence Construction

Fence material shall be buried a minimum of 12 inches below the ground surface, leaving 22 to 24 inches above ground. A trench shall be dug or a cut made with a blade on heavy equipment to allow 12 inches of fence to be buried below the natural level of the ground. Desert tortoise-proof fencing shall be attached to the security fencing with hog rings placed at 12- to 18-inch intervals. Smooth (barb-less) livestock wire shall be used except where grazing occurs. The desert tortoise fence must be perpendicular to the ground surface or angled slightly away from the Project area towards the side encountered by tortoises. After the desert tortoise fence has been installed and secured, excavated soil will be replaced and compacted to minimize soil erosion.

In situations where burying the fence is not practical because of rocky substrate, the desert tortoise fence material shall be bent at a 90° angle to produce a lower section approximately 14 inches wide, which will be placed parallel to, and in direct contact with, the ground surface; the remaining 22-inch wide upper section shall be placed vertically against the existing fence, perpendicular to the ground and attached to the security fence with hog rings at 12- to 18-inch intervals. The lower section in contact with the ground shall be placed in the direction of potential tortoise encounters and level with the ground surface. Soil and cobble (approximately 2 to 4 inches in diameter or larger) shall be placed on top of the lower section of fence material on the ground, covering up to four inches of material. A minimum of 18 inches shall be maintained between the cobble surface and the top of the tortoise-proof fence. For sections of the fence with a gate, one of three options will be implemented. The first option is fence material buried to a minimum 18-inch depth in line with and below the gate attached to a fence rail that is flush with the ground. The second option is burial of cobble to a minimum 18-inch depth in line with and below the gate. The third option is a shallow-slope concrete apron along the ground surface with the gate positioned on top.

2.4. OPERATIONS AND MAINTENANCE

CES expects an operational lifetime of the solar voltaic Project site to be 25 to 30 years. Operation and maintenance activities within the Project ROW shall be implemented over the life of the Project. No new access roads outside the Project ROW shall be constructed for O&M activities. CES employees shall inspect the desert tortoise exclusionary fencing on a monthly basis by walking the enclosed perimeter .

There would be little ground-disturbing activity associated with ongoing O&M procedures. The activities that could require soil-surface disturbance would be repairs of erosion control devices or exclusionary fencing in the event of storm damage or other emergencies. No new disturbance would occur to carry out O&M activities because this work would occur within the Project ROW. No adverse impacts to desert tortoise are anticipated to occur during O&M activities with the implementation of mitigation measures.

The BLM Barstow Field Office shall be contacted for emergency activities that would have to be carried out outside of the BLM ROW.

2.5. CONSERVATION AND PROTECTIVE MEASURES

Vehicles and construction equipment shall be monitored by Authorized Biologists and desert tortoise monitors until desert tortoise exclusionary fence installation is complete. No construction activities, including fence installation, shall begin until Authorized Biologists and desert tortoise monitors are approved. The names and qualifications of individuals that BLM proposes to allow CES to use as Authorized Biologists will be sent to USFWS for approval. Additional names shall be submitted to BLM as needed for approval, subject to the BO; names of biologists who would be used to monitor future operations and maintenance shall be submitted to BLM for its approval at least 30 days prior to the proposed onset of Project activities.

Authorized Biologists shall conduct clearance surveys, relocate desert tortoises (if necessary) offsite, and ensure that the effects of the Project on the desert tortoise and its habitat are minimized. An Authorized Biologist shall possess thorough and current knowledge of desert tortoise behavior, natural history, ecology, physiology, and shall demonstrate substantial field experience and training to safely and successfully:

- handle and temporarily hold desert tortoises,
- excavate burrows to locate desert tortoises or eggs,
- relocate/translocate desert tortoises,
- unearth and relocate desert tortoise eggs, and
- locate, identify, and record all forms of desert tortoise sign.

Desert tortoise monitors shall be individuals who would monitor Project activities within desert tortoise habitat, ensure proper implementation of protective measures, and record and report desert tortoise and sign observations in accordance with approved protocol; they would also report incidents of noncompliance with the BO and BLM permit stipulations. Desert tortoise monitors shall assist Authorized Biologists during surveys, but would not be authorized to conduct clearance surveys unless directly supervised by an Authorized Biologist; "directly supervised" means the Authorized Biologist would be in direct voice and sight contact with the desert tortoise monitor.

2.5.1 Desert Tortoise Clearance Surveys and Relocation Efforts

Pre-construction surveys for desert tortoise shall be conducted within the Project site ROW and the required buffer areas. A desert tortoise exclusionary fence shall be installed prior to removal of vegetation and/or initiation of facilities construction. BLM and USFWS approved Authorized Biologists and desert tortoise monitors shall walk parallel 30-foot wide linear transects covering 100 percent of the site and within a 100-foot buffer. If tortoises are detected during the survey, an Authorized Biologist shall relocate the tortoise outside of the Project ROW fence within 1,000 feet of the point of capture. Tortoises shall only be relocated onto BLM managed lands. Based on the results of the Spring 2009 desert tortoise survey, only two tortoises may require relocation off the Project site.

2.5.2 Inspection of Desert Tortoise Barriers

The risk level for a desert tortoise to encounter a breach in the fence is greatest in the spring and fall, during and following precipitation events. The desert tortoise fence shall be inspected monthly to maintain an effective barrier to tortoise movement. Inspections shall be documented in writing and include any observations of entrapped animals; repairs needed; tortoises, tortoise burrows, and carcasses; and recommendations for supplies and equipment needed to complete repairs and maintenance. All repairs shall take place within one week of a breach discovery.

2.5.3 Repair and Maintenance of Desert Tortoise Barriers

Repairs of fence wash-outs shall involve either (1) realignment of the fence to an area outside of the wash or (2) re-construct tortoise-proof fencing. Gaps and breaks in the fence will require either (1) repairs to the existing fence in place, (b) replacement of the damaged section, (c) burying fence, or (d) filling in gaps or holes under the fence and replacing cobble on top. All fence damage shall be repaired in a timely manner so that tortoises do not travel through damaged sections. A desert tortoise barrier shall be present at all times. In addition to periodic inspections, debris that accumulates along the fence shall be removed.

2.5.4 General Conservation Measures During Construction activities (GCM)

GCM (CONST) #1: Stream Crossings. Only ephemeral stream crossings are present on the Project site. No perennial or intermittent streams are located within the Project ROW. CES plans to smooth out the ephemeral drainages (a smoother surface for construction and maintenance) and create swales that would allow the movement of water to slowly cross the site and allow sheet drainage at the far north end of the site. Laydown areas would be located at least 100 feet away from drainages. No refueling, equipment repair, or lubrication activities would be allowed within 100 feet of the drainages. Proper spill containment materials to isolate potential spills shall be utilized.

GCM (CONST) #2: Vegetation disturbance. Ground clearing or grading shall occur only within the Project ROW. Some vegetation within the ROW shall be permanently removed. Healthy Joshua trees and all cacti with the exception of cholla species shall be relocated in accordance with a

BLM/USFWS/CDFG approved transplantation protocol. No vegetation shall be removed outside the ROW.

GCM (CONST) #3: Stabilization/reclamation. Surface stabilization and reclamation within and along the boundaries of the Project ROW shall be accomplished by removing all construction debris from the Project area and returning the soil to its original grade around the perimeter of the Project ROW.

2.5.5 Desert Tortoise Protective Measures During Construction Activities (DTM)

To minimize take of the desert tortoise during construction activities, BLM shall require CES to implement the following desert tortoise-specific conservation measures:

DTM (CONST) #1: CES shall designate a **field contact representative** (FCR) who will be responsible for overseeing compliance with BLM permit stipulations and the terms and conditions of the BO, and for coordination with BLM and the CDFG. The FCR shall be onsite during all Project activities. The FCR shall have the authority to stop Project activities if a desert tortoise is at risk or if protective measures are not being adequately implemented. The FCR shall have a copy of the BLM stipulations and the BO at all times. The FCR may be a crew chief, or a field supervisor, a project manager, any employee of the Project proponent, or an Authorized Biologist.

DTM (CONST) #2: An Authorized Biologist shall conduct a **contractor desert tortoise education program**. The program shall be received, reviewed, and approved by BLM prior to the initiation of work. The program may consist of a class or video. The contractor desert tortoise education program shall be designed to inform construction personnel, subcontractors, and all other visitors to the construction site of the biological resources and constraints associated with this Project. Wallet-sized cards with important information for workers to carry are required. Only workers who have successfully completed the education program shall be allowed to enter the construction site. The operator shall be responsible for ensuring that the education program is developed and presented prior to conducting activities. New employees shall participate in the education program prior to working onsite.

The education program will focus on:

- General resource protection, such as the purpose for resource protection; the identification of sensitive resources likely to be found in the general Project footprint; construction practices to be employed to protect sensitive resources; protocol to resolve conflicts that may arise during the construction process; and ramification of non-compliance; and
- Specific desert tortoise education, which shall at a minimum include information on the biology and distribution of the desert tortoise, general behavior and ecology of the desert tortoise, its legal status and occurrence in the Project area, the definition of "take" and associated penalties for violations of State or Federal laws, the measures designed to minimize the effects of construction activities, and reporting procedures to be used in the event that a desert tortoise is encountered.

DTM (CONST) #3: Desert tortoises shall be handled only by Authorized Biologists (or by desert tortoise monitors under the direct supervision of an authorized biologist) and only when necessary. Authorized Biologists and desert tortoise monitors shall follow the "Guidelines for Handling Desert Tortoises During Construction Projects" (Desert Tortoise Council 1999) when handling desert tortoises and their eggs and during examination and excavation of desert tortoise burrows.

DTM (CONST) #4: If a Desert Tortoise Requires Relocation Offsite, only the Authorized Biologist shall handle each desert tortoise when necessary. New latex gloves shall be used when handling each desert tortoise to avoid transfers of infectious diseases between animals. Desert tortoises shall be moved the minimum distance possible within BLM and USFWS approved habitat that are offsite on public lands within its home range. A desert tortoise found above ground shall be moved in the direction in which it was moving and placed under the shade of a shrub.

DTM (CONST) #5: Until the exclusionary fence is complete, Authorized Biologists shall conduct **preconstruction clearance surveys** for desert tortoises within 48 hours of the start of any ground disturbing construction activity. At a minimum, the clearance surveys shall cover the entire Project ROW and a 100-foot Zone of Influence (ZOI) around the BLM ROW Project boundary. Work area boundaries shall be delimited with flagging or other marking to minimize surface disturbance associated with vehicle straying. Special habitat features, such as burrows and drinking sites, identified by the Authorized Biologist shall be avoided to the extent possible. Burrows that are found shall be checked for desert tortoises and eggs. When desert tortoises are found, the **burrows shall be flagged** so that equipment operators and drivers shall clearly see the flagging and avoid the burrows. Unoccupied burrows shall be flagged in a manner that contrasts with occupied burrows.

DTM (CONST) #6: A **construction monitoring team** of at least one Authorized Biologist and one desert tortoise monitor shall be assigned to each fence installation construction area. Fence installation may have more than one construction crew working simultaneously. The assigned desert tortoise monitor shall sweep in front of each construction crew's equipment during its operation. The Authorized Biologist shall have the authority to halt Project activity that might result in harm to a desert tortoise and/or be a violation of the Project stipulations. Project activity shall be allowed to continue only after the desert tortoise is no longer at risk.

DTM (CONST) #7: After fence installation, the Authorized Biologist shall conduct a **100 percent coverage protocol survey for desert tortoises** within the Project site. All desert tortoises found shall be marked and removed from the enclosure and placed outside the nearest fence. Once the survey has been completed, no further interior surveys will be necessary unless a breach in the fencing occurs. If the fence has been breached for more than two weeks without repair, the BLM shall be notified and additional surveys may be required at the discretion of the BLM.

DTM (CONST) #8: Project activities shall be confined to the Project ROW and approved access roads and storage areas. The only exception of construction activities outside the ROW is to connect the solar power generation station to the existing power lines along Foothill Road. This connection shall occur offsite across Foothill Road from the south side of the road to the north side of the road along Santa Fe Fire Road only.

DTM (CONST) #9: Areas to be used for **stockpiles, vehicle turn-arounds, service of vehicles, and storage of equipment and material** shall be restricted to the Project ROW within the desert tortoise exclusionary fencing. Leftover excavated material shall not be left in place, but shall be disposed of in designated areas and in a manner approved by BLM.

DTM (CONST) #10: Project vehicles shall be restricted to the Project ROW or on existing roads. Off-road or cross-country travel shall be prohibited except in emergency situations. No additional dirt or paved roads shall be created off the Project ROW.

DTM (CONST) #11: Until the exclusionary fence is complete, **vehicles parked in desert tortoise habitat shall be inspected** for desert tortoises underneath prior to moving the vehicle. If a desert tortoise is observed underneath the vehicle, an Authorized Biologist shall be contacted. If possible, the desert tortoise should be left to move on its own; otherwise, the desert tortoise shall be removed and relocated by the Authorized Biologist.

DTM (CONST) #12: Vehicle speeds shall not exceed 20 miles per hour during construction activities. The **speed limit** shall be maintained within the Project ROW and on unpaved access roads while driving in desert tortoise habitat.

DTM (CONST) #13: All **construction areas shall be inspected** for desert tortoises until fence installation has been completed and tortoises onsite have been relocated. Any hole or trench shall be inspected for desert tortoises prior to its being closed. Trenches left open overnight or over a weekend shall be covered with metal plates to prevent desert tortoises from entering.

DTM (CONST) #14: Firearms and domestic dogs shall be prohibited from work areas.

DTM (CONST) #15: Trash and food items shall be disposed of promptly in predator-proof containers with re-sealable lids. Trash containers shall be inspected at the end of each work day. These containers shall be regularly removed from the Project site to reduce the attractiveness of the area to common ravens and other desert tortoise predators.

DTM (CONST) #16: Encounters with desert tortoises shall be immediately reported to an Authorized Biologist. The Authorized Biologist shall maintain a record of all desert tortoises encountered during Project activities. Information recorded for each desert tortoise shall include: the location (narrative, vegetation type, and maps); date of observation; general condition of health, including apparent injuries and state of healing; whether the desert tortoise voided its bladder; if moved, location moved from and location moved to; digital photographs of each handled tortoise; and diagnostic markings (i.e., identification numbers or marked lateral scutes).

DTM (CONST) #17: Upon locating a **dead or injured** desert tortoise, CES shall notify the BLM and USFWS immediately. Written notification shall be made within 72 hours of the date and time of the finding or incident (if known), and shall include location of the carcass, a photograph, cause of death (if known), and other pertinent information. Desert tortoise remains shall be left in place (or just outside of the construction footprint or fenced area). Desert tortoises injured through CES activities shall be transported to a veterinarian for treatment at the expense of CES. If an injured animal recovers, the USFWS shall be contacted for final disposition of the animal.

DTM (CONST) #17: All **leaks, spills, or releases** of fuel or other hazardous materials shall be reported immediately to BLM. All material that leaks, spills, or is otherwise released into habitat of the desert tortoise shall be removed immediately. The Authorized Biologist shall ensure that all appropriate measures, including those proposed by CES and the BO terms and conditions, are implemented during the removal of the hazardous materials.

DTM (CONST) #18: No later than 90 days after completion of construction, the FCR and Authorized Biologist shall prepare a report for the BLM and USFWS. If the proposed Project will take place over the course of two or more years, these reports shall be submitted annually. The report shall document the effectiveness and practicality of the mitigation measures, the number of desert tortoises excavated from burrows, the number of desert tortoises moved from the site, the number of desert tortoises killed or injured, and the specific information for each desert tortoise. The report shall make recommendations for modifying the stipulations to enhance desert tortoise protection or to make it more workable for the operator. The report shall provide an estimate of the actual acreage disturbed by various aspects of the operation and shall note any deviations from the approved disturbance footprint, if any.

DTM (CONST) #19: BLM shall require CES to offset the disturbance of desert tortoise habitat resulting from the Project. Since all 512.7 acres of new disturbance (5.3 acres of dirt roads are not considered tortoise habitat) is permanent and shall occur on BLM lands, CES shall make monetary compensation to acquire approximately 513 acres of habitat per the West Mojave Plan [BLM 2006] (513 acres at 1:1 non-DWMA habitat).

2.5.6 GENERAL PROTECTIVE MEASURES DURING OPERATION AND MAINTENANCE ACTIVITIES (GPM O&M)

GPM (O&M) #1: Vegetation disturbance. If unforeseen circumstances require disturbance beyond the Project ROW, CES shall notify BLM immediately.

GPM (O&M) #2: Stabilization/reclamation. Surface stabilization and reclamation within and along the boundaries of the Project ROW shall be accomplished by removing all construction debris from the Project area and returning the soil to its original grade around the perimeter of the Project ROW.

2.5.7 Desert Tortoise Protective Measures During Operation and Maintenance Activities (DTM O&M)

To minimize take of the desert tortoise during O&M activities, BLM shall require CES to implement the following desert tortoise-specific conservation measures:

DTM (O&M) #1: CES shall define a maintenance plan and a routine schedule of O&M activities and associated protocol for approval by BLM.

DTM (O&M) #2: For emergency maintenance involving surface disturbance in desert tortoise habitat, CES shall notify BLM immediately. BLM shall notify USFWS. For both emergency and non-emergency actions, a desert tortoise monitor shall evaluate the site and, if required, monitor the activities. If desert tortoises must be handled, an Authorized Biologist shall conduct these activities. If desert tortoises must be handled during an emergency activity and an Authorized Biologist cannot reach the site in time, CES personnel may handle the desert tortoise only after specific approval from BLM and USFWS.

DTM (O&M) #3: Desert tortoises shall be handled only by Authorized Biologists (or by desert tortoise monitors under their direct supervision) and only when necessary. In the event a desert tortoise wanders into the solar facility through a damaged area of the fence, Authorized Biologists shall follow the "Guidelines for Handling Desert Tortoises During Construction Projects" (Desert Tortoise Council 1999) when handling desert tortoises.

DTM (O&M) #4: If a desert tortoise requires relocation offsite, the Authorized Biologist shall handle each desert tortoise only when necessary. New latex gloves shall be used when handling each desert tortoise to avoid transfers of infectious diseases between animals. Desert tortoises shall be moved the minimum distance possible within BLM and USFWS approved habitat that is offsite on public lands within its home range. A desert tortoise found above ground shall be moved in the direction in which it was moving and placed under the shade of a shrub.

DTM (O&M) #5: The desert tortoise **exclusionary fencing shall be inspected** during O&M activities. The desert tortoise fence shall be inspected on a regular basis sufficient to maintain an effective barrier to tortoise movement. Inspections shall be documented in writing and include any observations of entrapped animals; repairs needed; tortoises, tortoise burrows, and carcasses; and recommendations for supplies and equipment needed to complete repairs and maintenance. During the first two to three years, all fence inspections shall be conducted quarterly at a minimum, to identify and document breaches and problem areas such as wash-outs and vandalism. GPS coordinates shall be recorded for problem areas to identify locations that require more frequent inspections. Following this initial inspection period, subsequent inspections shall focus on known problem areas. In addition, areas prone to wash-outs shall be inspected following precipitation events. A database of problem areas shall be established.

DTM (O&M) #6: All O&M activities shall be confined to the Project ROW. Repairs of exclusionary fencing shall occur within the ROW. If fence repairs require the use of mechanized equipment or vehicles, all vehicles shall access the damaged fence area from within the ROW. Only foot traffic shall occur outside the ROW for fence repairs to minimize disturbance to desert tortoise habitat. If unforeseen circumstances require disturbance beyond the Project ROW, BLM shall notify USFWS immediately.

DTM (O&M) #7: Areas to be used for **stockpiles, vehicle turn-arounds, service of vehicles, and storage of equipment and material** shall be restricted to the Project ROW within the desert tortoise exclusionary fencing. Leftover excavated material shall not be left in place, but shall be disposed of in designated areas and in a manner approved by BLM.

DTM (O&M) #8: Project vehicles shall be restricted to the Project ROW, or on existing roads. Off-road or cross-country travel shall be prohibited except in emergency situations. No additional dirt or paved roads shall be created off the Project ROW during O&M activities.

DTM (O&M) #9: All vehicles shall be parked inside the Project ROW. If unforeseen instances occur that require parking along access roads to the Project site in desert tortoise habitat, the **vehicle shall be inspected** for desert tortoises underneath prior to moving the vehicle. If a desert tortoise is observed underneath the vehicle, an Authorized Biologist shall be contacted. If possible, the desert tortoise should be left to move on its own; otherwise, the desert tortoise shall be removed and relocated by the Authorized Biologist.

DTM (O&M) #10: Vehicle speeds shall not exceed 20 miles per hour while driving along Santa Fe Fire Road to access the Project site. The **speed limit** shall be maintained within the Project ROW and on unpaved access roads while driving in desert tortoise habitat.

DTM (O&M) #11: Firearms and domestic dogs shall be prohibited from the Project site.

DTM (O&M) #12: Trash and food items shall be disposed of promptly in predator-proof containers with re-sealable lids. Trash containers shall be inspected at the end of each work day.

DTM (O&M) #13: Spike strips shall be installed within the solar facility as determined appropriate by an Authorized Biologist after inspection of the solar facility for areas that may be prone to perching. The spike strips shall prevent ravens from perching along the Project site boundary to minimize predation against desert tortoises.

DTM (O&M) #14: Encounters with desert tortoises shall be immediately reported to an Authorized Biologist. The Authorized Biologist shall maintain a record of all desert tortoises encountered during O&M activities. Information recorded for each desert tortoise shall include: the location; date of observation; general condition of health and apparent injuries and state of healing; location of damaged area of fence; if moved, location moved from and location moved to and whether the desert tortoise voided its bladder; and diagnostic markings (i.e., identification numbers or marked lateral scutes).

DTM (O&M) #15: Upon locating a **dead or injured** desert tortoise, CES shall notify the BLM and USFWS immediately. Written notification shall be made within 72 hours of the date and time of the finding or incident (if known), and shall include location of the carcass, a photograph, cause of death (if known), and other pertinent information. Desert tortoises injured through CES activities shall be transported to a veterinarian for treatment at the expense of CES.

DTM (O&M) #16: All **leaks, spills, or releases** of fuel or other hazardous materials along access roads to the Project site within desert tortoise habitat shall be reported immediately to BLM. All material that leaks, spills, or is otherwise released into habitat of the desert tortoise shall be removed immediately. CES shall adhere to all appropriate measures of the BO terms and conditions during the removal of the hazardous materials.

2.6. NON-COMPLIANCE

If CES fails to comply with any of its proposed protective measures or the terms and conditions of the BO, BLM shall suspend the new ROW grant and temporary use permit. Non-compliance typically results in a conference with USFWS. Re-initiation of the BO potentially may occur. CES shall maintain communication with BLM regarding efforts and progress to comply with all protective measures.

SECTION 3.0 – DESERT TORTOISE (FEDERAL- AND STATE-LISTED THREATENED)

3.1. CONSULTATION WITH LOCAL FISH AND GAME

The project Applicant will have to consult with DFG on the desert tortoise to fulfill obligations under the California Endangered Species Act. As part of the consultation, additional avoidance and minimization measures as well as additional compensation for habitat loss may be required by the state. It is assumed by this BA that all such measures and mitigation shall be implemented and will be supplementary to the measures proposed above.

3.2. LITERATURE REVIEW

Prior to performing the field surveys, existing documentation relevant to the Project site was reviewed. The most recent records of the California Natural Diversity Database managed by the CDFG (2009) were reviewed for the quadrangles containing and surrounding the Project site (i.e., *Cougar Buttes, Fry Mountains, Grand View Mine, Lucerne Valley, Old Woman Springs,* and *White Horse Mountain,* California USGS 7.5 minute quadrangles). Site visits are detailed below.

3.2.1 Initial Site Visit

The initial field survey was conducted on the Project site to identify any potential for occurrence of sensitive species, vegetation communities, or habitats to support sensitive wildlife species. The survey was conducted on foot throughout the Project site between 0830 and 1612 hours on March 16, 2009. In addition, the biologists traveled by car along dirt roads, such as Santa Fe Fire Road, Zircon Road, Foothill Road, Donaldson Road, and other unnamed dirt roads within and adjacent to the Project site. Photographs of the Project site were recorded to document existing conditions. Weather conditions during the survey included temperatures ranging from approximately 42 to 77 degrees Fahrenheit with clear skies and dry conditions. Chambers Group biologists Heather Clayton and Paul Morrissey conducted the general reconnaissance survey.

3.2.2 Focused Desert Tortoise Survey

The protocol level focused surveys for desert tortoise were conducted on March 24 to 27, March 31 to April 3, and April 7 to 10, 2009, by biologists Paul Morrissey, Kris Alberts, Nichole Cervin, Laura Gorman, Rebecca Alvidrez, Lisa Wadley, and Saraiah Skidmore. The objective of the survey was to determine if desert tortoises are currently or have recently inhabited the site or the adjacent habitat surrounding the Project site. Weather conditions during all focused surveys ranged from temperatures of 41 to 82 degrees Fahrenheit, with average winds from 0.8 to 18 miles per hour, and cloud cover from 0 to 100 percent. One rainfall event occurred on April 10, 2009. No surface water was present on the Project site during this event.

3.2.3 Results of the Desert Tortoise Surveys

The survey was conducted on foot over the entire Project site utilizing 30-foot (approximately 10-meter) belt transects to provide 100 percent coverage on the site. A 500-foot buffer was examined due to burrowing owl surveys being conducted concurrently. In areas with a high density of tortoise sign or where tortoises were encountered, buffer transects were extended up to 1,200 feet from the edge of the Project site. This occurred in the southeast and southwest areas of the Project site. The ZOI survey was conducted in the areas directly adjacent-to and surrounding the Project site where suitable desert tortoise habitat exists. The ZOI survey included single line transects at 600, 1,200, and 2,400 feet parallel to the edge of the Project boundaries in accordance with protocol. Habitat conditions for each transect were documented and included vegetation communities, soil types, landscape usage, topography, weather conditions, and the amount of existing human-caused disturbance. All sign of desert tortoises including live tortoises, shell, bones, scutes, limbs, scat, burrows, pallets, tracks, egg shell fragments, courtship rings, drinking sites, and mineral licks were recorded on standardized data sheets. If a burrow was observed, a mirror was used to reflect sunlight into the burrow to visually determine if desert tortoise were present. Locations of all sign were recorded using GPS units. Photographs were taken of transect habitat characteristics, desert tortoise encounters, and desert tortoise sign.

A total of seven desert tortoises were detected during the focused surveys. One live tortoise was observed within the Project boundaries in the southeast corner of the site. Five live tortoises were detected within the ZOI survey area southeast of the Project site; this area is an active tortoise area. One live tortoise was observed offsite in the southwest ZOI survey area. Information on live tortoises encountered is provided in Table 1. In addition, two tortoises were observed on June 26, 2009, during a focused burrowing owl survey. These two individuals were observed foraging in the southwestern area, one within the Project site in the southwestern corner, and one within the buffer survey area immediately offsite. These individuals were not photo-documented; therefore, it cannot be determined whether they were documented in the previous survey. These two tortoises appeared healthy and did not show signs of an upper respiratory track disease or damage from predatory attacks. Both the southeast and southwest areas of the Project site are determined to support foraging adult tortoises.

Four skeletal remains and one carcass were observed on or near the Project site. Carcass classification is broken down into five categories, according to USFWS desert tortoise survey methodology and sign documentation protocol (USFWS 1992): Class 1 shell remains are still fresh or putrid. Class 2 shell remains are normal in color and the scutes still adhere to the bone, while in Class 3 remains, scutes are peeling off. In Class 4 shell remains, the shell bone is falling apart, and the growth rings on the scutes are peeling. If the remains are disarticulated and scattered, the remains are Class 5. Information pertaining to the carcass and skeletal remains observed in this survey is provided in Table 2.

Other forms of desert tortoise sign were observed on and near the site. Sign included active and inactive burrows, fresh and old scat, and tracks. Tracks were generally found in sandy areas where fresh scat and active burrows were located.

Desert tortoises are solitary animals and travel long distances in order to mate during the breeding season. Tortoises and sign were found on the east and west sides of the Project site, which likely indicates that tortoises cross the site for mating during the breeding season. The two male tortoises and one female tortoise found on the southwestern area of the Project site most likely utilize the burrows identified along the southern border. The Project site allows for safe passage to the area of high density tortoise habitat located to the southeast of the Project site; and it also serves as foraging grounds for desert tortoises, especially where annual vegetation and beavertail cacti (*Opuntia basilaris* var. *basilaris*) showed signs of recent feedings in both the southeast and southwest corner of the Project site.

Table 1
Desert Tortoise Encounters During Focused Surveys

Tortoise (ID #)	Date	Original Coordinates*		Age Class	Sex	Habitat	Health
		Easting	Northing				
1	3/26/09	0518964	3807854	Adult	F	Creosote-White Bursage Series near 1200' ZOI in SE area	Shell had scratch marks and a couple chips, but tortoise appeared healthy. No URTD
2	3/26/09	0518703	3808220	Adult	F	Creosote-White Bursage Series in buffer in SE area	Had a bite mark, but tortoise appeared healthy. No URTD
3	3/27/09	0518702	3808069	Adult	UNK	Creosote-White Bursage Series on site in SE area	Old small gnaw mark above left hind leg, otherwise tortoise appeared healthy. No URTD
4	4/1/09	0518232	3807553	Adult	UNK	Creosote-White Bursage Series on 2400' ZOI in SE	Tortoise appeared healthy. No URTD
5	4/7/09	0518068	3807754	Adult	M	Creosote-White Bursage Series near 1200' ZOI in SW	Shell had small chips but tortoise appeared healthy. No URTD
6	4/10/09	0518312	3806948	Adult	M	Creosote-White Bursage Series near 1200' ZOI in SE area	Tortoise appeared healthy. No URTD
7	4/17/09	0516223	3807569	Adult	M	Creosote-White Bursage Series in buffer in SE area	Shell had a small chip but tortoise appeared healthy. No URTD

Table 2
Desert Tortoise Skeletal and Shell Remains Observed During Focused Surveys

Tortoise Remains (ID)	Class	Location*		MCL (mm)	Time Since Death	Cause of Death	Location Description
		Easting	Northing				
1	5	0518937	3807793	275	>4 YRS.	Unknown	In the open within the ZOI.
2	4	0519044	3807786	275	>4 YRS.	Possible gun shot and/or scavenged.	In the open within the ZOI, near a dead white bursage.
3	5	0518892	3807874	UNK	>4 YRS.	Unknown	In the open within the ZOI near a tortoise shelter site.
4	3	0518101	3808140	120	2-4 YRS.	Unknown, evidence of scavenging.	In the open and under a dead Joshua tree within the site boundaries.
5	3	0515774	3807597	120	2-4 YRS.	Possible gun shot and/or scavenged.	Scattered over 20 feet in front of a burrow within the ZOI.

Burrow classification is broken down into five categories according to USFWS desert tortoise survey methodology and sign documentation protocol (USFWS, 1992). An active burrow with recent desert tortoise sign, such as scat, is categorized as Class 1. A Class 2 burrow is considered to be a definite desert tortoise burrow in good condition but has no evidence of recent use. Class 3 and 4 burrows are fairly deteriorated, but a Class 3 is determined still to be a desert tortoise burrow, while a Class 4 burrow is questionable. A Class 5 burrow is in somewhat good condition and could possibly be a desert tortoise burrow. Desert tortoises utilize several different types of burrows, depending upon season and activity. Burrows can range from 2 to 10 meters deep and may be modified small mammal dens to shallow hollows that are used temporarily during dispersal activities (Ernst et al., 1994). As desert tortoise will often utilize small mammal dens, it is not uncommon to classify burrows as potential desert tortoise burrows when in fact they initially belong to other wildlife in the area, such as kit fox and/or black-tailed jackrabbit.

A total of 107 burrows were observed on or near the Project site. Table 3 shows the breakdown of the number of burrows into separate class categories. Within the Project site, 3 Class 1 through 3 burrows and 31 Class 4 to 5 tortoise burrows were observed. Within the 500-foot buffer, 8 Class 1 through 3 burrows and 17 Class 4 to 5 burrows were observed. Within the ZOI, 27 Class 1 through 3 burrows and 21 Class 4 to 5 burrows were observed.

A total of 38 tortoise scats were observed within the buffer or within the ZOI. No desert tortoise scat was identified within the Project site. Five tortoise scats were observed within the 500-foot buffer, and thirty-three scats were observed within the ZOI. Scat classification is also broken down into five categories according to USFWS desert tortoise survey methodology and sign documentation protocol (USFWS 1992). A Class 1 scat is wet, not from rain or dew, or is freshly dried, and has an obvious odor. A Class 2 scat is dried with a glaze, has some odor, and is dark brown. Class 3 and 4 scats are dried with no glaze or odor, but a Class 3 scat is light brown showing little signs of bleaching, while Class 4 is light brown to pale yellow with loose material. A Class 5 scat is bleached or consists only of plant fiber. Table 3 shows the breakdown the number of scats into separate class categories.

Table 3
Desert Tortoise Sign Observed During Focused Surveys

	Burrows within Project Site	Burrows within Buffer Area	Burrows Within ZOI Area	Total Burrows Identified	Scat
Class 1	3	9	26	38	2
Class 2					16
Class 3					12
Class 4	30	21	18	69	0
Class 5					8
Total	**33**	**30**	**44**	**107**	**38**

3.3. GENERAL DESCRIPTION AND HABITAT REQUIREMENTS

The desert tortoise (*Gopherus agassizii*) is a federal- and state-listed threatened species. The desert tortoise ranges from central Nevada and extreme southwestern Utah south through southeastern California and southwestern Arizona into northern Mexico (Berry et al., 2002). In California, the historic range of this species includes northeastern Los Angeles, eastern Kern, eastern San Diego, and southeastern Inyo counties, as well as most of San Bernardino, Riverside, and Imperial counties. The desert tortoise inhabits river washes, rocky hillsides, slopes, and flat deserts with sandy or gravelly soils. Soil conditions must be friable for burrow and nest construction. Creosote bush, white bursage, saltbush, Joshua tree, Mojave yucca, and cacti are often present in the habitat along with other shrubs, grasses, and wildflowers. The desert tortoise is entirely herbivorous and forages on a variety of plants, including cactus species and annual vegetation. The desert tortoise is a medium-sized tortoise with an adult carapace length of about 8 to 14 inches. Males, on average, are larger than females and are distinguished by a more concave plastron, longer gular horns, larger chin glands on each side of the lower jaw, and longer tails. Carapace color varies from light yellow-brown (horn color) to dark grey-brown. In addition to range, a composite of characteristics often is necessary to distinguish the desert tortoise from other species of gopher tortoise, but its most unique feature is its very large hind feet. Desert tortoise populations are declining due to habitat destruction/loss, predation, illegal collecting, grazing, and OHV use (Berry 1997).

Habitat for the desert tortoise occurs on the Project site. Soil conditions appropriate for burrow construction are present onsite. Recent historic records report that desert tortoises have occurred within the vicinity of the Project site. A total of seven desert tortoises were detected during the focused surveys. One live tortoise was observed during the focused surveys within the Project boundaries in the southeast corner of the site. Five live tortoises were detected within the ZOI survey area during the focused surveys, southeast of the Project site; this area is an active tortoise area. One live tortoise was observed offsite in the southwest ZOI survey area during the focused surveys. In addition, two tortoises were observed on June 26, 2009, during a focused burrowing owl survey, foraging in the southwestern area, one within the Project site in the southwestern corner, one within the buffer survey area immediately offsite. These individuals were not photo-documented; therefore, it cannot be determined whether these individuals migrated from the southeastern area and were previously documented during the desert tortoise focused surveys. However, with this supplemental data, both the southeast and southwest area of the Project site are determined to support foraging adult tortoises. Please see the Results of the Desert Tortoise Surveys below for more details regarding this species.

The density of desert tortoises identified in the Project area surveyed is relatively small compared to other known populations in the vicinity, and the proposed area for the solar site is not contained within designated critical habitat. Critical habitat for desert tortoise exists approximately 10 miles to the north of the Action Area. Although very few tortoise and tortoise sign were identified in the southeastern area of the Project site, suitable habitat, including burrow substrate and forage vegetation, is found primarily to the south, southwest, and southeast outside of the Action Area. Currently, roads such as Santa Fe Fire Road, Foothill Road, Zircon Road, Donaldson Road, and several unnamed dirt roads exist in or adjacent to the Action Area. These roads are traveled by local residents for recreation activities, such as OHV and firearms use. Many dump sites were identified along the dirt roads. Tortoise carcasses were identified near areas with hundreds of shotgun rounds, though death by shooting could not be positively determined since many of the tortoise carapaces were scattered throughout the area.

SECTION 4.0 – ENVIRONMENTAL BASELINE

The Project site is located on BLM land. The surrounding area of the Project site is comprised of open space dominated by creosote bush and white-bursage with desert washes and disturbed communities. A few scattered residential homes exist along the Project boundary or just outside the 500 ft buffer. One trailer home exists near the southern boundary of the site, and a second home exists approximately one-half mile southeast of the site. Several dirt roads cross the Project site, which are used as access to homes or for off-highway vehicle (OHV) recreational activities and/or camping. A few dump sites, historic and recent, were observed during surveys, along with fire pits, tire tracks, and shotgun shells. The common raven, a predator of the desert tortoise, was observed throughout the surveys on the Project site. Signs of dog activity were also present.

4.1. SOILS

The U.S. Department of Agriculture (USDA) Soil Conservation Service and USDA Natural Resources Conservation Service (NRCS) Web Soil Survey has not mapped soils within the Project site (USDA 2009). No Order III soil survey has been conducted on or in the vicinity of the proposed Project area. Data derived from the State's soil geographic database (STATSGO) has limitations. STATSGO (Order V) in particular was meant for regional planning purposes with large scale extrapolation from other sources. With very limited ground truthing available, this data has limited application. The 1970 General Soil Map for the SW Desert Area, San Bernardino County, has mapped and described the soils within the Project area as the Arizo-Daggett Association (excessively drained and somewhat excessively drained, very deep, gravelly soils). The following includes a description of soils identified during the reconnaissance level survey.

The Project site consists primarily of sandy loam soils on the flat terraces, loamy sandy soils, and loamy sand within the drainages and washes. The loamy sandy soils were more prevalent in the northern portion of the Project site and in the eastern area along the washes. Overall, these are well drained soils typical of sandy environments. A layer of caliche rock was exposed in some areas of the washes and dirt roads, and desert pavement type soils were observed in patches throughout the western area of the site. These substrates were unvegetated.

4.2. VEGETATION

4.2.1 Creosote Bush-White Bursage Series (319 acres)

The Creosote Bush-White Bursage Series is an extremely xeromorphic (i.e., plants adapted for survival in dry conditions) mixed evergreen-deciduous shrubland that typically consists of well-drained secondary soils with very low available water holding capacity. The community typically is found on slopes, fans, and in valleys at elevations up to 3,300 feet amsl (Sawyer and Keeler-Wolf 1995). This community type is dominated by creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*), with creosote bush occupying 55 percent and white bursage occupying 45 percent of the total vegetative cover in this portion of the Project site. The total vegetative cover by perennials was approximately 45 percent. The substrate onsite consists of sandy loam and loamy sand. Often, many species of ephemeral herbs in this community will flower in late March and April if winter rains are sufficient. Numerous annual species, still in the vegetative state prior to the onset of flowers, were observed in this community in March and bloomed in April and through the first part of May 2009.

Creosote Bush-White Bursage Series is present throughout the eastern portion of the Project site. In addition to creosote bush and white bursage, other common plant species found on the Project site typical of this vegetation community include: common fiddleneck (*Amsinckia menziesii*), blackbush (*Coleogyne ramosissima*), Nevada ephedra (*Ephedra nevadensis*), winter fat (*Krascheninnikovia lanata*), box-thorn (*Lycium* sp.), blazingstar species (*Mentzelia* spp.), golden cholla (*Opuntia echinocarpa*), big galleta grass (*Pleuraphis rigida*), and Joshua tree (*Yucca brevifolia*).

4.2.2 White Bursage Series (176 acres)

White Bursage Series, described by Sawyer and Keeler-Wolf (1995), is a mixed evergreen-deciduous shrubland dominated by white bursage with creosote bush also present in lower proportion. The shrub canopy, typically less than 10 feet in height, is two-tiered with few creosote bush shrubs in the upper tier over the lower tier consisting of white bursage. The ground layer is open with annual species seasonally present. The White Bursage Series typically occurs on alluvial fans or at the base of a mountain where several alluvial fans have merged (bajadas), stabilized sand fields, and upland slopes with well-drained soils at elevations up to 4,000 feet amsl. The substrate onsite is gravelly sand with small patches of desert pavement scattered throughout this community. The ground appeared more compacted and with larger soil particles in this series than was observed in the Creosote Bush-White Bursage Series onsite.

White Bursage Series is present on the northwestern portion of the Project site. In contrast to the Creosote Bush-White Bursage Series where creosote bush and white bursage exhibited similar cover values, the White Bursage Series is comprised of 75 percent white bursage and only 25 percent creosote bush of the total vegetative cover (approximately 35 percent) within this portion of the site. In addition to these species, other common plant species found onsite typical of the White Bursage Series include: Nevada ephedra, Pima rhatany (*Krameria erecta*), and box-thorn. Less common species found within this community include: common fiddleneck, wingnut cryptantha (*Cryptantha pterocarya*), flat-topped buckwheat (*Eriogonum deflexum*), California buckwheat (*Eriogonum fasciculatum*), wishbone bush (*Mirabilis* sp.), phacelia (*Phacelia* sp.), big galleta grass, and Joshua tree. Joshua tree is less abundant in this portion of the site than within the Creosote Bush-White Bursage Series.

4.2.3 Desert Wash (18 acres)

Desert Wash habitats are characterized as sandy or gravelly drainages and arroyos of the lower Mojave and Colorado deserts. This community closely resembles the Mojave Wash Scrub as described by Holland (1986). These washes typically have braided channels that rearrange with every surface flow event. The substrate of the Desert Wash area onsite consists of loose sandy soil with very little ground cover.

Desert Wash is present in the northeastern corner of the Project site and along the eastern edge of the site. The Desert Wash environments support a larger diversity of plant species than is found throughout other portions of the Project site. The Desert Wash community onsite is dominated by cheesebush (*Hymenoclea salsola*) and blunt tansymustard (*Descurainia pinnata* ssp. *glabra*), with white bursage, Nevada ephedra, creosote bush, desert alyssum (*Lepidium fremontii* var. *fremontii*), and sandpaper plant (*Petalonyx thurberi*) also common. Other less frequently occurring species in the Desert Wash include common fiddleneck, four-wing saltbush (*Atriplex canescens*), blackbush, wingnut cryptantha, bladderpod (*Isomeris arborea*), scalebroom (*Lepidospartum squamatum*), golden cholla, big galleta grass, London rocket (*Sisymbrium irio*), and occasional Joshua trees.

4.2.4 Disturbed/Sparsely Vegetated (3 acres)

Portions of the site that are classified as Disturbed are those areas that are either devoid of vegetation (cleared or graded) such as dirt roads or those heavily compacted areas that are dominated by a sparse cover of ruderal vegetation. Disturbed Areas are present within the Project site along the major, named dirt roads, in portions of the dry washes where scouring has taken place, in large areas of desert pavement, and on sediment berms throughout the site. Only sparse vegetation is found growing in these areas. Species growing in Disturbed areas include stunted white bursage shrubs, red-stemmed filaree (*Erodium cicutarium*), sapphire eriastrum (*Eriastrum sapphirinum*), and Mediterranean schismus (*Schismus barbatus*).

4.3. WILDLIFE

4.3.1 Birds

Thirteen bird species were observed/detected on the Project site during the one-day reconnaissance level survey. Species included black-throated sparrow (*Amphispiza bilineata),* sage sparrow (*Amphispiza belli*), California quail (*Callipepla californica),* horned lark (*Eremophila alpestris*), mourning dove (*Zenaida macroura*), rock pigeon (*Columba livia*), black-tailed gnatcatcher (*Polioptila melanura*), ladder-backed woodpecker (*Picoides scalaris*), common raven (*Corvus corax*), European starling (*Sturnus vulgaris*), northern harrier (*Circus cyaneus*), and house finch *(Carpodacus mexicanus).* These thirteen species are commonly found in the region. In addition, one potential ostrich (*Struthio camelus*) or possibly an emu carcass was found scattered on the western area of the Project site, most likely an escaped or released pet.

4.3.2 Mammals

Seven common mammal species were observed or detected on the Project site during the survey. Common species observed were the black-tailed jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus audubonii*), domestic dog (*Canis familiaris*), and kit fox (*Vulpes macrotis*). A property within the Project site hosts approximately five domestic dogs within a chain linked fence, one dead dog was found buried nearby. In addition, sheep (*Ovis aries*) carcasses were observed in the western portion of the site. Two species of ground squirrels were observed on site, the Antelope ground squirrel (*Ammospermophilus leucurus*) and the round-tailed ground squirrel (*Spermophilus tereticaudus*).

SECTION 5.0 – EFFECTS OF THE PROPOSED ACTION

5.1. GENERAL ANALYSIS

The Mojavean desert habitat found within the Project site is regionally important to many wildlife species, including the desert tortoise. The proposed Project has been designed to meet CES's needs while minimizing impacts to the desert tortoise and its habitat.

Impacts associated with the construction of the solar facility shall be contained almost entirely within the ROW. The only exception of construction activities outside the ROW is to connect the solar power generation station to the existing power lines located along Foothill Road at the northern boundary of the Project site. Foothill Road is an established and maintained dirt road. This connection shall require crossing from the south side of Foothill Road to the north side of Foothill Road along Santa Fe Fire Road, the only area for construction activities located off the Project ROW. No removal of vegetation shall occur during this process. No disturbance of desert tortoise habitat shall occur because roads are not considered desert tortoise habitat.

Permanent removal of vegetation shall occur only within the ROW. Relocation of healthy Joshua trees between 2 feet and 10 feet in height and healthy cacti such as beaver tail cactus over 2 feet in height shall be conducted in accordance with the approved Restoration Plan. No new disturbance shall be created by the restoration process and no vegetation removal shall occur outside the Project ROW.

The installation of desert tortoise exclusionary fencing shall prevent impacts to tortoises within the Project ROW. Due to the small size of the solar facility (approximately 0.5 miles long), minimal impacts to wildlife corridors and wildlife passage within the area is expected. Impacts to desert tortoise wandering capabilities for foraging and breeding activities shall be minimal.

Relocation of desert tortoise off the Project ROW may be required. Based on the results of the baseline surveys, the desert tortoise population on the Project site is relatively small. Two tortoises were observed within the Project site; one in the southwest and one in the southeast corner. All other tortoises detected during the surveys outside the Project ROW (within the ZOI and buffer area) are not expected to be affected by construction activities. Monitoring of these tortoises and implementation of protective measures within the BO shall minimize impacts to the tortoises identified in the immediate area.

Relocation of any tortoise within the Project ROW shall be conducted in accordance with DTM (CONST) #4, and in accordance with all measures outlined in the BO. Relocation of any tortoise is not expected to negatively impact the small population of tortoises identified in the immediate area south of the Project site.

Once constructed and operational, the solar facility shall require very little maintenance. Operation and maintenance shall require regularly-scheduled inspections of the exclusionary fencing on foot and infrequent repairs at isolated locations after thunderstorms or heavy rain events. Repairs shall abide by the desert tortoise protective measures defined in the BO. Access to damaged areas along the fence shall occur from within the ROW.

5.2. DIRECT EFFECTS

The installation of the desert tortoise exclusionary fence, construction of the solar facility, and operation and maintenance of the solar facility, could pose threats to the desert tortoise.

Construction activities shall expose desert tortoises to a fairly high level of human activity for a relatively brief time period (approximately eight months per construction phase). Most of the hazards shall be from operation of equipment and vehicles adjacent to occupied desert tortoise habitat. The installation of desert tortoise exclusionary fencing around the perimeter of the Project site, implementation of protective measures in the BO, presence of Authorized Biologists and desert tortoise monitor teams, and regular inspections of the exclusionary fencing shall minimize impacts to desert tortoise.

Vehicular and equipment travel on roadways outside the Project ROW could cause collisions with desert tortoises that result in injury or death. Although access into the Project ROW shall be on existing roads, the increased level of traffic during construction activities, and to a lesser extent, the increased level of traffic during O&M activities could result in tortoise injury or death. Equipment and vehicles used during routine operation and maintenance could be a hazard to desert tortoises living offsite.

Desert tortoises may emerge during warm periods in winter to sun themselves and to search for food and water. In the more active months, desert tortoises may seek shelter from the sun and heat under vegetation or construction equipment and vehicles and may be crushed when the equipment and vehicles are moved. The exclusionary tortoise fencing and implementation of measures outlined within the BO should minimize impacts to tortoise injury or death within the Project ROW.

Desert tortoise burrows on or near the edge of the Project ROW may collapse from the vibration of heavy equipment and vehicles during construction. Burrows that are unoccupied at the time may be destroyed, which could affect tortoises in the future if shelter from the heat and sun in those burrows is no longer available, or if tortoises are exposed for extended time to predators. Unauthorized handling or other human contact could transmit diseases to the desert tortoise.

The presence of BLM- and USFWS-approved desert tortoise monitors, implementation of Best Management Practices (BMPs), and USFWS desert tortoise protection measures during the construction should ensure that most desert tortoises are avoided or moved from harm's way.

The clearance surveys within 48 hours prior to installation of exclusionary fencing shall reduce the likelihood of desert tortoises being trapped or crushed in their burrows. If the weather is amenable, desert tortoises may move into the work area between the time of the survey and the ground-disturbing work during installation of the tortoise exclusionary fencing. The flagging of desert tortoise burrows and the Authorized Biologist and desert tortoise monitor teams shall ensure that no burrows are inadvertently destroyed. Also, burrows that cannot be avoided (such as those within the Project ROW) shall be checked immediately before they are disturbed by construction activities to remove any desert tortoises.

Relocation of tortoises offsite on public lands within their home range is not expected to negatively impact the small population of tortoises to the south of the site if relocation were necessary. CES shall adhere to all protective measures defined in the BO.

Maintenance activities along the ROW, such as driving along existing access roads, walking the perimeter of the Project site during exclusionary fence inspections, and any isolated fence replacement activities, could result in injury or death of desert tortoise that manage to move onsite. Equipment access to damaged areas of the exclusionary fence shall stay within the ROW to minimize potential of desert tortoise encounters. For O&M activities requiring surface disturbance, CES shall implement the construction protective measures to minimize encounters with desert tortoises during O&M activities.

5.3. INDIRECT EFFECTS

CES would clear ground in the Project ROW to conduct the Project, resulting in loss of habitat. Some vegetation within the Project ROW would be permanently removed.

Installation of the protective exclusionary fencing shall be confined to the BLM ROW. Facility connection to the existing power lines off ROW from the south side of Foothill Road to the north side of Foothill Road (approximately 20 feet wide) along Santa Fe Fire Road shall not impact desert tortoise habitat. Access into the Project ROW shall occur within existing roadways. No loss of habitat shall occur. Therefore, no new disturbance to desert tortoise habitat shall occur offsite.

Even minimal disturbance along the existing access roads may be prone to colonization by non-native species. The displacement of native vegetation with non-native vegetation is expected to be negligible, but the spread of these species could be enhanced by Project activities. CES's application of its restoration and weed control plan should prevent outbreaks of non-native vegetation, such as Sahara mustard, into areas that do not yet have this species.

BLM has estimated that a maximum of 512.7 acres of desert tortoise habitat may be newly disturbed during the Project construction. The Project site contains 5.3 acres of non-desert tortoise habitat. BLM expects no more than 512.7 acres of new disturbance because Project activities would remain within the exclusionary fencing. No new access roads shall be constructed.

The impediment of tortoise movement during foraging and breeding migrations, as well as habitat fragmentation, from the proposed Project shall be minimal because of the relatively small size of the Project site.

5.4. CUMULATIVE EFFECTS OF THE ACTION

USFWS is obligated per 50 CFR 402.02 to consider in the BO the effects of future State, tribal, local, or private actions that are reasonably certain to occur concurrently in the Action Area. Future Federal actions that are unrelated to CES's proposed action shall not be considered in the BO, but shall instead require separate consultation pursuant to Section 7 of ESA. Cumulative effects occur when individual impacts from each project considered would have an incremental impact to the environment.

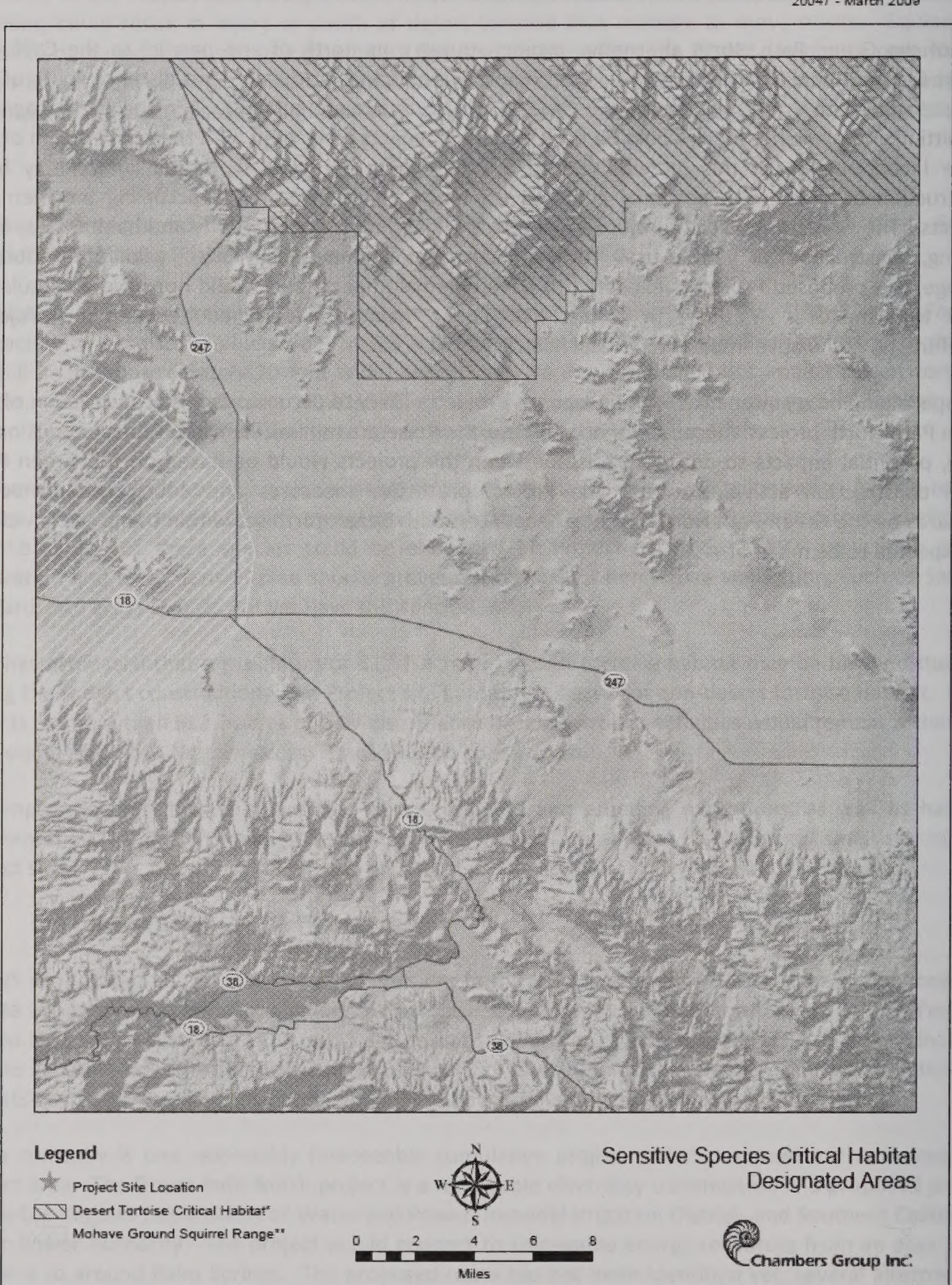
There currently is one reasonably foreseeable cumulative project action proposed in the immediate Project area. The Green Path North project is a renewable electricity transmission line proposed jointly by the Los Angeles Department of Water and Power, Imperial Irrigation District, and Southern California Public Power Authority. The project would connect to renewable energy resources from an area near Hesperia to around Palm Springs. The proposed route has not been identified yet; several alternatives are being considered and project lengths vary between alternatives. The project would involve the construction and operation of an up to 800 MW high-voltage transmission line with capability for future expansion. New access roads and microwave communication sites will be required.

One of the Green Path North alternative project routes runs north of and parallel to the California Desert Conservation Area Boundary. This route lies within 4 miles at the shortest distance south of the proposed Chevron Project. Because the Green Path North project currently is in the early stages of permitting and planning, there would be no cumulative impacts associated with the construction of the Phase I construction of this project. Based on the timing of Phase II, both projects may have construction activities with potential cumulative impacts to desert tortoise occurring between the projects. The Green Path North project may impact wildlife, including mortality and habitat loss, from grading, construction, or vehicle use. Although each project may locally affect wildlife corridors or passage, the proposed Project is expected to have minimal impacts and would not have a cumulative effect with the Green Path North project. No critical habitat is identified between the projects; therefore, no cumulative impacts to critical habitat would occur.

The operation and maintenance of the proposed Project is likely to occur during the construction of the Green Path North project. Because impacts to desert tortoise are minimized by the Project exclusionary fence, potential impacts to desert tortoise between the projects would be based on the Green Path North construction activities. With the Project protective measures and anticipated protective measures by the Green Path North project, encounters with desert tortoises within the projects vicinity are expected to be minimal.

Figure 3 Designated Critical Habitat

20047 - March 2009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Project Site Location
Desert Tortoise Critical Habitat*
Mohave Ground Squirrel Range**
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Miles
Sensitive Species Critical Habitat
Designated Areas
Chambers Group Inc.

*U.S. Fish and Wildlife Service, Critical Habitat Data. Federal Register Vol. 59, No. 26, pg. 5820, February 8, 1994
**Nature Serve Species Range, http://www.natureserve.org/explorer. (Accessed: March 18, 2009)

SECTION 6.0 – DETERMINATION OF EFFECT

The Bureau of Land Management has determined that the Project may affect, and is likely to adversely affect, the desert tortoise and will initiate formal consultation with the U. S. Fish and Wildlife Service under Section 7 of the Endangered Species Act.

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Appendix D
Comprehensive Biological Resources Assessment

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COMPREHENSIVE
BIOLOGICAL RESOURCES ASSESSMENT
FOR THE CHEVRON SOLAR PROJECT SITE
COMMUNITY OF LUCERNE VALLEY, CALIFORNIA

Prepared for:

Mr. Christopher Otahal
BUREAU OF LAND MANAGEMENT
Barstow Field Office
2601 Barstow Road
Barstow, CA 92311
(760) 252-6033

Prepared by:

CHAMBERS GROUP, INC.
17671 Cowan Avenue, Suite 100
Irvine, California 92614
(949) 261-5414

July 2009

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SECTION 1.0 – INTRODUCTION

Chambers Group, Inc. (Chambers Group) was retained by Chevron Energy Solutions (CES) to conduct a variety of biological surveys and a literature review for the proposed 49 megawatt (MW) solar photovoltaic generating station (Project). The Plan of Development has been submitted to the Bureau of Land Management (BLM) Barstow Field Office in connection with BLM right of way application #CACA 49516, per guidance from the BLM's solar energy development policy, Instruction Memorandum No. 2007-097 (IM 2007-097). This report provides the results of field surveys and literature research conducted to describe the environmental setting of the project site. These results will provide the basis for the analysis of the potential for project impacts to biological resources, which is conducted to satisfy the National Environmental Policy Act (NEPA).

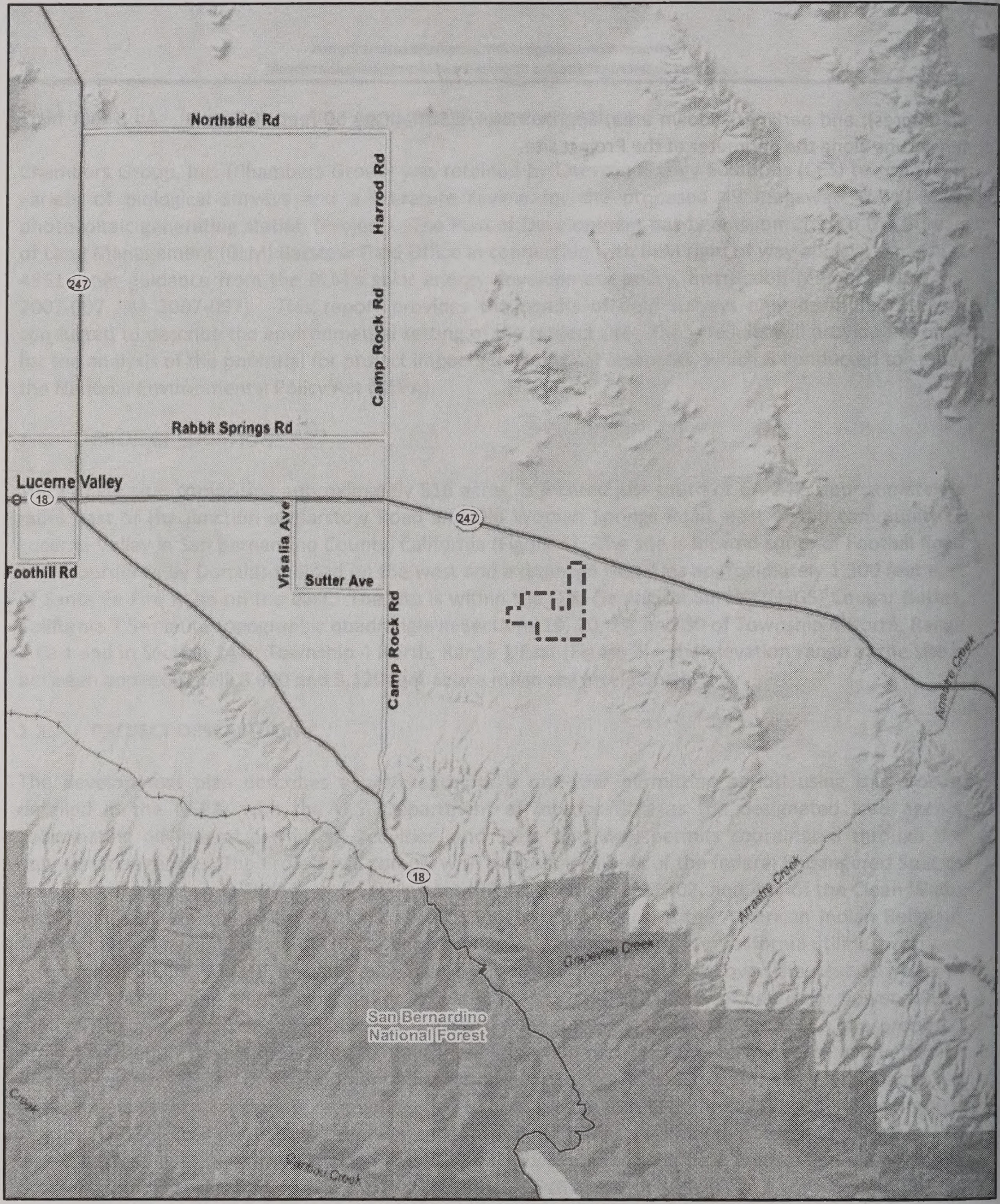
1.1. PROJECT LOCATION

The Project site, comprising approximately 516 acres, is located just south of CA-247, approximately 8 miles east of the junction of Barstow Road and Old Woman Springs Road, east of the community of Lucerne Valley in San Bernardino County, California (Figure 1). The site is located south of Foothill Road and is bordered by Donaldson Road on the west and a drainage that runs approximately 1,300 feet east of Santa Fe Fire Road on the east. The site is within the U.S. Geological Survey (USGS) Cougar Buttes, California 7.5-minute topographic quadrangle in Sections 19, 20, 29, and 30 of Township 4 North, Range 2 East and in Section 24 of Township 4 North, Range 1 East (Figure 2). The elevation range at the site is between approximately 3,000 and 3,120 feet above mean sea level (amsl).

1.2. PROJECT DESCRIPTION

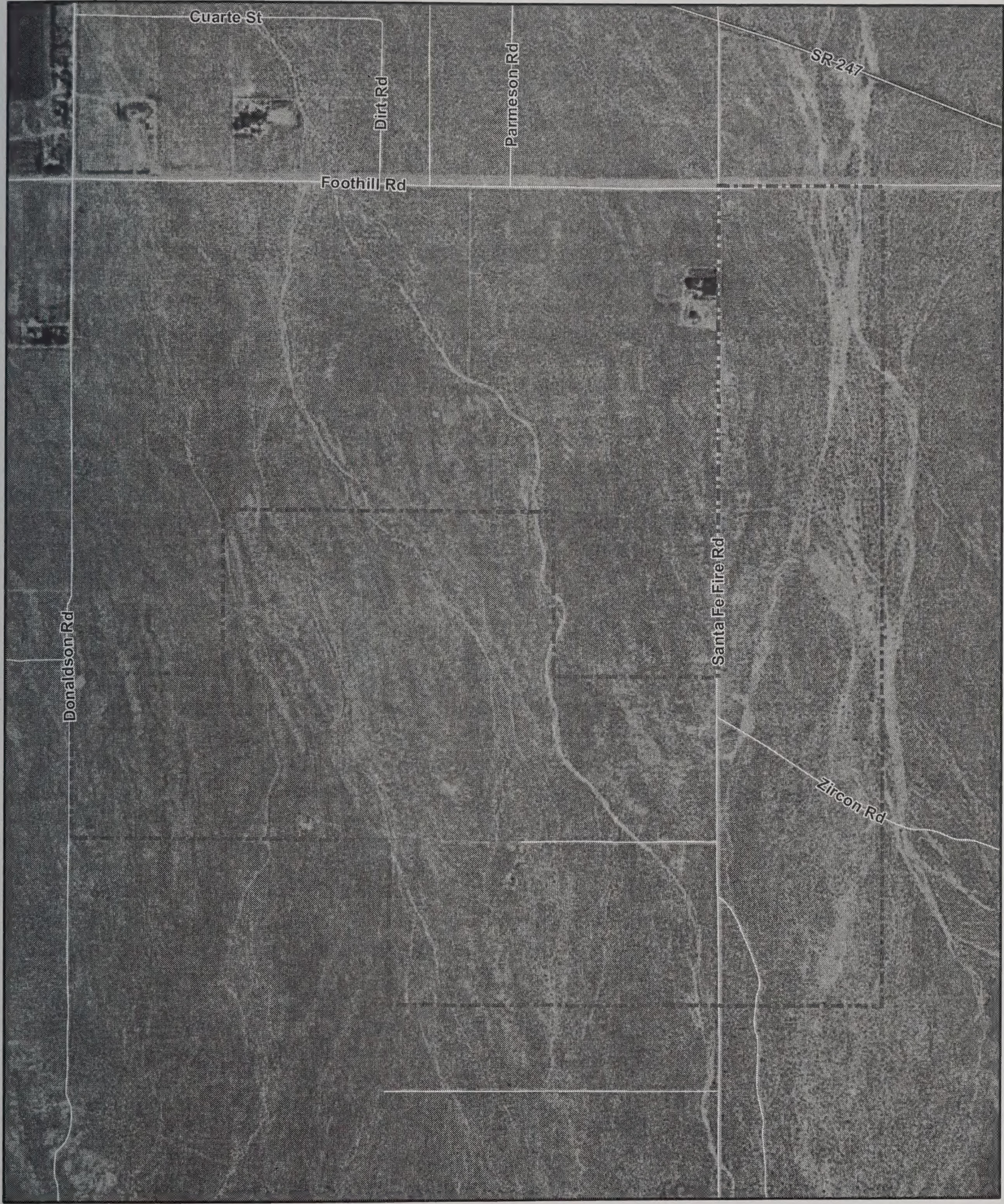
The development plan describes a preference for a one-year permitting period using the process detailed in the NEPA, with the U.S. Department of Interior BLM as the designated lead agency coordinating all federal permitting activities, and State and local permits coordinated through the appropriate agencies. The Project will comply with the requirements of the federal Endangered Species Act (ESA), the California Endangered Species Act (CESA), Sections 401, 402, and 404 of the Clean Water Act (CWA), Section 106 of the National Historic Preservation Act, and the American Indian Religious Freedom Act. The build phase of construction is scheduled to begin in 2010. California utilities will need in excess of 50,000 MW/yr of new renewable energy generation capability over the next 10 years to meet the state's clean energy needs. It is expected that at least 5,000 MW of new solar power will be required to meet this need, and that this amount could grow to nearly 10,000 MW. The proposed Project will supply renewable energy to meet these important mid- and long-term needs. In an effort to meet this need, CES and its development partners propose to design, construct, operate, and maintain a photovoltaic generating station, interconnecting to Southern California Edison's (SCE) 33 kV distribution system. CES selected this BLM site for its excellent solar radiation, proximity to potential customers, and access to existing electric transmission. The ROW encompasses the solar field, control and maintenance building, and the substation, for a total of approximately 516 acres.

The general facility dimensions of the Project include: substation/switchyard, 50 feet by 200 feet (0.2 acre); warehouse/control building, 150 feet by 30 feet by 12 feet (0.1 acre); power line within site area, connecting to the existing power lines along Foothill Road, 20 feet by 3 miles (5 acres); access road within site area, 20 feet by 3 miles (7 acres); solar array for Phase 1 (210 acres); solar array for Phase 2, (210 acres); and parking/laydown area, approximately 250 feet by 50 feet, (0.5 acre). An 8-foot high fence runs along the perimeter of the Project site.



Chevron Solar Project
Project Vicinity Map
Figure 1

Chambers Group Inc.



Legend

▭ Project Boundary

Chevron Solar Project
Project Location Map
Figure 2

Chambers Group Inc.

Cougar Buttes 7.5 minute USGS Quad Map
Sections 19, 20, 29, & 30, Township 4N, Range 2E

Biological Resources

Chambers Group conducted a literature review, reconnaissance-level habitat assessment, protocol-level focused plant survey, weed mapping, presence/absence survey for desert tortoise and Phase II burrow and burrowing owl survey, and breeding season avian point count survey for the proposed Project. The reconnaissance-level survey occurred in March 2009; a subsequent protocol-level focused plant survey was conducted by qualified botanists during the appropriate blooming periods for special status plant species in May 2009, a Mohave ground squirrel site assessment was conducted in May 2009, and a subsequent protocol-level focused desert tortoise and burrowing owl survey was conducted in June 2009.

SECTION 2.0 – METHODOLOGY

2.1. LITERATURE REVIEW

Prior to performing the field surveys, available documentation, reports, and literature relevant to the Project site were reviewed. The most recent records of the California Natural Diversity Database (CNDDB) managed by the California Department of Fish and Game (CDFG) (CDFG 2009) and the California Native Plant Society's (CNPS) Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPS 2009) were reviewed for the relevant quadrangles containing and surrounding the Project site, excluding those quadrangles to the south of the project quadrangle where elevation changes result in different vegetation communities, habitats, and microhabitats than found on the project site (i.e., *Cougar Buttes, Fry Mountains, Grand View Mine, Lucerne Valley, Old Woman Springs,* and *White Horse Mountain,* California USGS 7.5 minute quadrangles). These databases contain records of reported occurrences of federal- or state-listed as endangered or threatened or proposed endangered or threatened species, California Species of Special Concern (CSC), CNPS-listed species, or otherwise sensitive species, vegetation community, or habitat that may occur within or in the immediate vicinity of the Project site. Species designated as sensitive by the BLM (BLM 2006) also were included in the review.

For the purposes of this report, plant and animal species of elevated conservation concern were emphasized in field and literature research. These species include those listed by either the state of California (i.e., the CDFG) or the federal government (i.e., the USFWS) as either threatened or endangered; those considered "sensitive" by the BLM; and those listed as "Species of Special Concern" by the CDFG. Additionally, some non-government organizations maintain "watch" lists that are considered by the reviewing agencies and the public when evaluating a project's potential impacts to natural resources. Accordingly, species included on these lists also were considered and collectively referred to herein as "special status species."

Status Codes

The following information is a list of abbreviations used to help determine the significance of biological resources potentially occurring on the Project site.

Federal

FE = Federally-listed; Endangered

FT = Federally-listed; Threatened

State

ST = State listed; Threatened

SE = State listed; Endangered

RARE = State-listed; Rare (Listed "Rare" animals have been re-designated as Threatened, but Rare plants have retained the Rare designation.)

CSC = State Species of Special Concern

California Native Plant Society (CNPS)

List 1A = Plants presumed extinct in California.

List 1B = Plants rare and endangered in California and throughout their range.

List 2 = Plants rare, threatened or endangered in California but more common elsewhere in their range.

List 3 = Plants about which we need more information; a review list.

List 4 = Plants of limited distribution; a watch list.

CNPS Extensions

0.1 = Seriously endangered in California (greater than 80 percent of occurrences threatened/high degree and immediacy of threat).

0.2 = Fairly endangered in California (20-80 percent occurrences threatened).

0.3 = Not very endangered in California (less than 20 percent of occurrences threatened).

Bureau of Land Management (BLM)

BLM S = Species designated as sensitive by the BLM California State Office.

2.2. SOILS

Before conducting the surveys, soil maps were referenced online for San Bernardino County to determine the types of soil found on the site. Soils were determined in accordance with categories set forth by the U.S. Department of Agriculture (USDA) Soil Conservation Service and by referencing the USDA Natural Resources Conservation Service (NRCS) Web Soil Survey (USDA 2008), and the 1970 General Soil Map for the SW Desert Area, San Bernardino County.

2.3. VEGETATION

A reconnaissance level field survey was conducted by Chambers Group biologists Heather Clayton and Paul Morrissey on the Project site in order to identify any potential for occurrence of special status plant species, vegetation communities, or habitats to support sensitive wildlife species. This survey was conducted between 0830 and 1612 hours on March 16, 2009 on foot throughout the Project site as well as by car along dirt roads, such as Santa Fe Fire Road, Zircon Road, Foothill Road, Donaldson Road, and other unnamed dirt roads within and adjacent to the Project site. Photographs of the Project site were recorded to document existing conditions.

Plant communities on the Project site were identified, qualitatively described, and mapped onto a 1:600 aerial photograph. Plant communities were determined in accordance with the categories set forth in authorities on vegetation types. The Desert Wash community onsite resembles the Mojave Wash Scrub community described in Holland (1986), while the more densely vegetated portions of the Project site have been described according to Sawyer and Keeler-Wolf (1995). These two authorities on vegetation types sometimes overlap in their community descriptions, however, often one authority will better describe a community than a second authority. Plants of uncertain identity were collected and subsequently identified from keys, descriptions, and illustrations in Abrams (1923, 1944, and 1951), Abrams and Ferris (1960), Baldwin et al. (2002), Ingram (2008), MacKay (2003), and Munz (1974). Plant nomenclature follows that of *The Jepson Desert Manual; Vascular Plants of Southeastern California* (Baldwin et al. 2002). A list of the plant species observed during the reconnaissance-level and protocol-level focused surveys is presented in Appendix A.

A special status species was considered to potentially occur in a project area if its known geographic range includes part of the project area or an adjacent USGS 7.5-minute quadrangle and/or if the general habitat or environmental conditions (e.g., soil type, etc.) required for the species were present. The criteria for evaluating a species potential for occurrence (PFO) on a site is presented in Table 1. Based on the literature search and results of the reconnaissance survey, sensitive species were determined to have a potential to occur onsite; protocol-level focused plant surveys were recommended within the Project boundary. Chambers Group botanists Rebecca Alvidrez, Nichole Cervin, Heather Clayton, Jenny McGee, and Maya Mazon conducted the protocol-level focused plant survey between May 4 and 14, 2009 (see Appendix B for resumes). This survey was conducted in accordance with Botanical Survey Guidelines of the California Native Plant Society (CNPS 2001). The following guidelines were in adhered to during the survey:

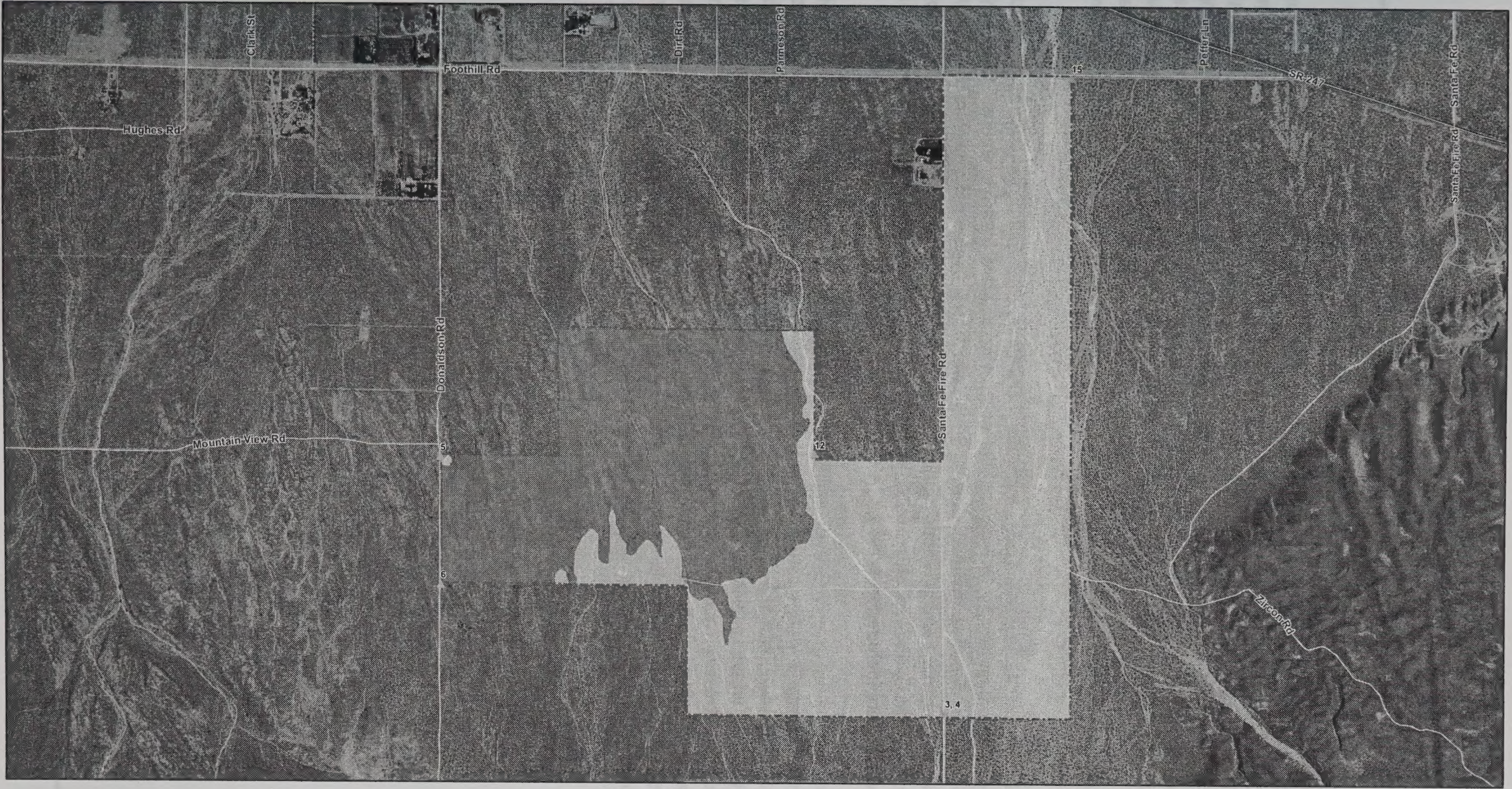
- Professional botanists with knowledge of plant taxonomy and plant community ecology and classification conducted the survey;
- Botanists were familiar with the plant species in the area and had previous experience conducting surveys for rare plants;
- Survey was conducted at the appropriate time when plants were both evident and identifiable (i.e., blooming periods);
- Botanists walked narrow transects using sub-meter technology to ensure 100 percent coverage of the Project area was attained; and
- Local reference sites were visited when available to confirm habitat suitability for special status plant species.

Table 1 Criteria for Evaluating Special Status Plant Species Occurrences

PFO	CRITERIA
Absent:	Species was not observed during protocol level focused surveys conducted at an appropriate time for identification of the species or species is restricted to habitats or environmental conditions that do not occur within the site.
Low:	Historical records for this species do not exist within the immediate vicinity (approximately 5 miles) of the site and/or habitats or environmental conditions

PFO	CRITERIA
	needed to support the species are of poor quality.
Moderate:	Either a historical record exists of the species within the immediate vicinity of the site (approximately 5 miles) and marginal habitat exists on the site, or the habitat requirements or environmental conditions associated with the species occur within the site, but no historical records exist within 5 miles of the site.
High:	Both a historical record exists of the species within the site or its immediate vicinity (approximately 5 miles) and the habitat requirements and environmental conditions associated with the species occur within the site.
Present:	Species was detected within the site at the time of the survey.

The protocol level focused plant survey consisted of walking the entire Project site and recording all plant species observed. To ensure the detection of rare plants, the botanists were organized into a single horizontal line and formed adjacent belt transects by having each botanist spaced apart from the next at a distance to survey 15 feet on each side of their own transect. The edge of each transect abutted the adjacent transect, leaving no gaps between each belt for 100 percent coverage. A Thales Mobile Mapper sub-meter GPS unit was used to ensure the lead botanist maintained an accurate position along the transect line. Each botanist walked in the direction toward the agreed upon endpoint within their respective belt transect in a slightly meandering pattern for maximum and overlapping coverage. When suitable microhabitats were encountered or where small plants resembling special status plant species were present, the botanists would stop and carefully scan the microhabitat to positively identify each plant. Transect lines were overlaid onto an aerial photograph showing the line walked by the lead botanist (Figure 3).



Chevron Solar Project
Vegetation Communities Map
Figure 3

Chambers Group Inc.

Image Source: National Agriculture Imagery Program (NAIP), August 2005

2.3.1 Non-Native Invasive Weed Mapping

Non-native invasive weeds are opportunistic plants that readily colonize disturbed areas and that can adversely affect the habitats they invade economically, environmentally, or ecologically. These plant species are able to exclude or out-compete desired native species and lead to a decrease in overall species diversity. Non-native invasive weeds are plant species arbitrarily defined by law as being especially undesirable, troublesome, and difficult to control. The definition will vary according to legal interpretation (Ogle et al. 2001). The BLM and other federal, state, and local agencies recognize that there are species, such as cheat grass (*Bromus tectorum*) and other grass species (*Schismus* sp.), that because of their widespread distribution are not considered feasible for general control in the Mojave desert.

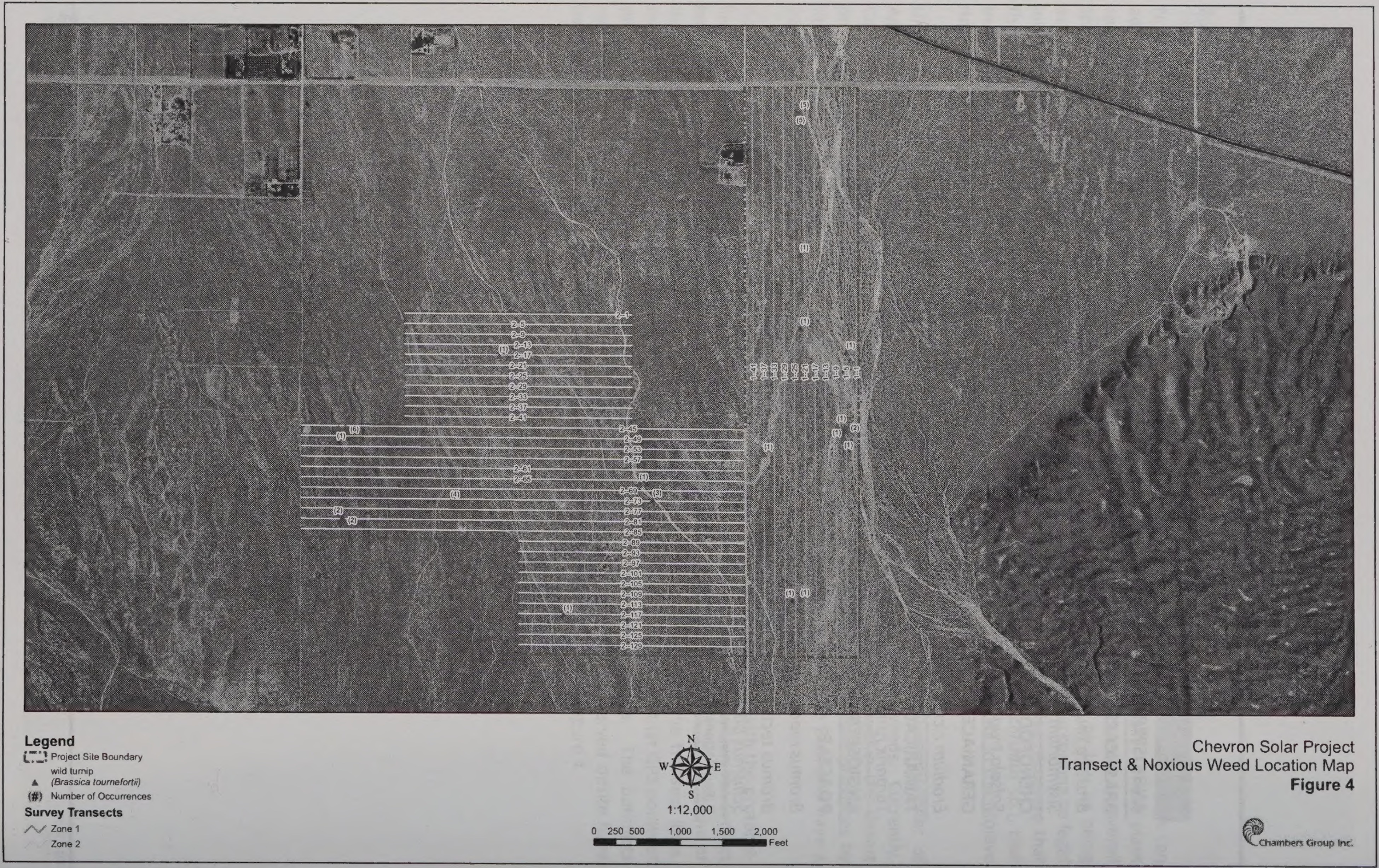
Under California Food and Agriculture Code, Sections 7270-7224, the California Commissioner of Agriculture is granted the authority to investigate and control non-native invasive weeds. Currently, California has 246 listed non-native invasive weeds, 38 of which are problematic within the desert provinces of southern California. Those weeds deemed non-native invasive in the desert provinces by the California Invasive Plant Council (Cal-IPC 2006), which are of most concern to the BLM and have a potential to occur onsite, are included in Table 2.

A field inventory for non-native invasive weed species was conducted in conjunction with the protocol-level focused plant survey to identify existing non-native invasive weed infestations within the Project boundary. While botanists walked transects looking for special status plant species, populations of those non-native invasive weed species listed in Table 2 were recorded between the transect lines. Because Sahara mustard (*Brassica tournefortii*) is particularly invasive, BLM requested that GPS points of this species be taken to document relative population densities on federal lands. The botanists recorded the locations of Sahara mustard onsite. Species in Table 2 that were observed onsite have been recorded according to occurrences along the individual transect lines shown on Figure 4.

Table 2 Non-Native Invasive Weeds Potentially Occurring Onsite

Scientific Name	Common Name
ANGIOSPERMS (DICOTYLEDONS)	
BRASSICACEAE	**MUSTARD FAMILY**
Brassica tournefortii	Sahara mustard
Sisymbrium irio	London rocket
CHENOPODIACEAE	**GOOSEFOOT FAMILY**
Salsola tragus	Russian thistle
GERANIACEAE	**GERANIUM FAMILY**
Erodium cicutarium	red-stemmed filaree
TAMARICACEAE	**TAMARISK FAMILY**
Tamarix ramosissima	Mediterranean tamarisk, salt cedar
ANGIOSPERMS (MONOCOTYLEDONS)	
POACEAE	**GRASS FAMILY**
Bromus madritensis ssp. *rubens*	foxtail chess
*Bromus tectorum**	cheat grass
*Schismus barbatus**	Mediterranean schismus

*** Populations were not mapped onsite as these species are not feasible for general control.**



Chevron Solar Project
Transect & Noxious Weed Location Map
Figure 4

Image Source: National Agriculture Imagery Program (NAIP), August 2005

2.4. WILDLIFE

A reconnaissance-level wildlife survey was conducted by Chambers Group biologists Heather Clayton and Paul Morrissey on the Project site on March 16, 2009 (see resumes in Appendix B). All wildlife and wildlife sign observed (e.g., tracks, scat, carcasses, burrows, and excavations) and detected (e.g., vocalizations) were recorded. Additional survey time was spent in those habitats most likely to be utilized by wildlife (e.g., undisturbed native habitat, wildlife trails, etc.) or in habitats with the potential to support special-status species. Notes were made on the general habitat types, species observed, and the conditions of the site. A list of the wildlife species observed during the reconnaissance-level and protocol-level focused surveys is included as Appendix C.

2.4.1 Desert Tortoise Surveys

The desert tortoise is federal- and state-listed as threatened, and the proposed Project site is within the known range of the desert tortoise; however, the proposed Project site is not within federally designated critical habitat for desert tortoise. Desert tortoise surveys were conducted by qualified biologists (see resumes in Appendix B) in accordance with protocols set forth by the U.S. Fish and Wildlife Service (USFWS) for any non-federal action that may occur within the range of the desert tortoise (USFWS 1992). Chambers Group conducted protocol level focused surveys for the desert tortoise on March 24 to 27, March 31 to April 3, and April 7 to 10, 2009.

The survey was conducted on foot over the entire Project site utilizing 30-foot (approximately 10-meter) belt transects to provide 100 percent coverage on the site and within a 500 foot buffer, due to burrowing owl surveys that were conducted concurrently. In areas with a high density of tortoise sign or where tortoises were encountered, buffer transects were extended up to 1,200 feet from the edge of the Project site, particularly in the southeast and southwest areas of the Project site. The zone of influence (ZOI) survey was conducted in the areas directly adjacent to and surrounding the Project site where suitable desert tortoise habitat exists and may potentially be directly or indirectly affected by Project operations. The ZOI survey included single line transects at 600 feet, 1,200 feet, and 2,400 feet parallel to the edge of the Project boundaries in accordance with protocol. Habitat conditions for each transect were documented, including vegetation communities, soil types, landscape usage, topography, weather conditions, and the amount of existing human-caused disturbance. All sign of desert tortoises, including live tortoises, shell, bones, scutes, limbs, scat, burrows, pallets, tracks, egg shell fragments, courtship rings, drinking sites, and mineral licks were recorded on standardized data sheets (Appendix D). If a burrow was observed, a mirror was used to reflect sunlight into the burrow to visually determine if desert tortoise were present. Locations of all sign were recorded using GPS units. Photographs were taken of transect habitat characteristics, desert tortoise encounters, and desert tortoise sign (Appendix E).

2.4.2 Burrowing Owl Surveys

The burrowing owl is a BLM sensitive species and CSC, and habitat for the burrowing owl exists on the Project site. A Phase II Burrow and Burrowing Owl Survey was conducted in accordance with the Burrowing Owl Survey Protocol and Mitigation Guidelines set forth by the California Burrowing Owl Consortium (1993) and the CDFG Staff Report (1995) concurrently with the desert tortoise survey.

Belt transects spaced at 30 feet (approximately 10 meters) were utilized to achieve 100 percent coverage on the site and within a 500 foot buffer (approximately 150 meters) around the site. Surveys protocol level focused on burrowing owl sign throughout the Project area and the entire ZOI survey areas for desert tortoise. All sign of burrowing owl activity (i.e., whitewash, prey remains, pellets, burrows, scratch marks, or feathers) were recorded on data sheets (Appendix D). Any suitable or potential burrow sites also were recorded. The location of any burrowing owls and/or sign was recorded using GPS units. Photographs of detected sign are included as Appendix E.

A second protocol level focused survey for burrowing owl was conducted on June 26, 2009 at six locations that exhibited burrowing owl sign from the previous March/April surveys. The biologists visited the six locations in the early morning hours when temperatures were favorable for this species.

2.4.3 Avian Point Count Survey

The avian point count surveys consisted of four point count "transects" conducted one week apart for four consecutive weeks in spring 2009 (a second set of point counts will be conducted in the winter between November and January). Chambers Group biologists Paul Morrissey, Kris Alberts, and Laura Gorman conducted the avian point count survey transects on March 26 and 27 (Transect #1), April 1 and 2 (Transect #2), April 9 (Transect #3), and April 17 (Transect #4), 2009. All point counts were conducted between the hours of 0645 and 0930. One avian point count transect was conducted per square mile, with a total of eight point count stations per transect (please see Appendix F). The point count station locations were linearly spaced at least 250 meters apart in areas where birds were expected to occur, including densely vegetated areas such as washes. Parameter constraints for the surveys included temperatures over 85 degrees Fahrenheit and winds above 20 miles per hour.

Each point count was conducted over a period of 10 minutes within a 100-meter radius. When conducting each point count transect, the biologists proceeded to a station and remained quiet for approximately five to ten minutes to allow birds to adjust to the presence of the biologist. During this time period, the temperature, wind, cloud cover, location, and habitat type was recorded. After equilibration, the biologist surveyed the species of birds present within the 100-meter area. The biologist moved around within each sampling station to enhance the possibility of identifying birds. In addition, sounds such as "pishing" were used in an attempt to draw birds into view. The species and number of birds observed at each station were recorded on standardized data sheets. All incidental bird observations were also recorded to acquire a complete inventory of birds present in the Project area. Incidental observations included birds observed or detected outside of the 10-minute point count survey period and/or outside the 100-meter survey radius.

2.5. WETLAND AND JURISDICTIONAL DELINEATION

2.5.1 Jurisdictional Criteria Review

Prior to beginning the field delineation, high-resolution aerial photographs, National Wetlands Inventory (NWI) maps, USGS topographic maps, and Google Earth images were examined to determine the potential areas of USACE/RWQCB/CDFG jurisdiction on the Proposed Project.

As prescribed by the 1987 Wetland Manual and Arid West Supplement, all available lists of hydric soils were referenced to identify any occurrence of hydric soils listed within the Project site. The national, state, and local hydric soils lists were used.

Soil maps were referenced online for San Bernardino County to determine the types of soil found on the site. Soils were determined in accordance with categories set forth by the USDA Soil Conservation Service and by referencing the USDA NRCS Web Soil Survey (USDA 2008), and the 1970 General Soil Map for the SW Desert Area, San Bernardino County.

United States Army Corps of Engineers Jurisdictional Criteria

The U.S. Army Corps of Engineers (USACE) asserts jurisdiction over traditional navigable waters (TNW), wetlands adjacent to TNWs, non-navigable tributaries of TNWs that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months), and wetlands that directly abut such tributaries. Pursuant to Section 404 of the CWA, the USACE regulates the discharge of dredged and/or fill material into waters of the United States. Waters of the United States include navigable waterways and wetlands adjacent to navigable waterways, and non-navigable waterways and wetlands adjacent to non-navigable waters that are contiguous with navigable waterways. The term "waters of the United States" is defined by 33 CFR Part 328 and currently includes (1) all navigable waters (including all waters subject to the ebb and flow of the tide), (2) all interstate waters and wetlands, (3) all other waters (e.g., lakes, rivers, intermittent streams) that could affect interstate or foreign commerce, (4) all impoundments of waters mentioned above, (5) all tributaries to waters mentioned above, (6) the territorial seas, and (7) all wetlands adjacent to waters mentioned above.

Wetlands are defined by 33 CFR 328.3(b) as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support...a prevalence of vegetation typically adapted for life in saturated soil conditions." In 1987 the USACE published a manual to guide its field personnel in determining jurisdictional wetland boundaries. This manual was amended in 2006 by the Arid West Supplement. Currently, the 1987 Wetland Manual and the 2006 Arid West Supplement provide the legally accepted methodology for identification and delineation of USACE-jurisdictional wetlands in southern California.

The methodology set forth in the 1987 Wetland Manual and updated by the Arid West Supplement generally requires that, in order to be considered a wetland, the vegetation, soils, and hydrology of an area must exhibit at least minimal hydric characteristics. While the manual provides great detail in methodology and allows for varying special conditions, a wetland should normally meet each of the following three criteria:

- More than 50 percent of the dominant plant species at the site must be typical of wetlands (i.e., rated as facultative or wetter in the 1988 National List of Plant Species that Occur in Wetlands [Reed 1988]). These plants are known as "hydrophytic vegetation."
- Soils must exhibit physical and/or chemical characteristics indicative of permanent or periodic saturation (e.g., a gleyed color, or mottles with a matrix of low chroma indicating a relatively consistent fluctuation between aerobic and anaerobic conditions). Such soils, known as "hydric

soils," have characteristics that indicate they are developed in conditions where soil oxygen is limited by the presence of saturated soil for long periods during the growing season.

- Hydrologic characteristics must indicate that the ground is saturated to within 12 inches of the surface for at least 5 percent of the growing season during a normal rainfall year. For most of low-lying southern California, 5 percent of the growing season is equivalent to 18 days.

Although the most reliable evidence of wetland hydrology may be provided by a gauging station or groundwater well data, such information is often limited for most areas. Thus, most hydrologic indicators are those that can be observed during field inspection. The following indicators provide some evidence of hydrology: (1) standing or flowing water; (2) water-logged soils during the growing season; (3) water marks present on trees or other objects associated with a drainage; (4) drift lines, or small piles of debris oriented in the direction of water movement through an area; (5) shelving; (6) destruction of terrestrial vegetation; and (7) thin layers of sediments deposited on leaves or other objects. The Arid West Supplement of 2006 includes all of these indicators as well as surface soil cracks, inundation visible on aerial imagery, salt and biotic crusts, aquatic invertebrates, hydrogen sulfide odor, evidence of oxidation/reduction reactions within the soil profile, and several others. In general, a combination of hydrologic indicators indicates a more defined hydrological system.

In the absence of wetlands, the limits of USACE jurisdiction in non-tidal waters, including intermittent Relatively Permanent Water (RPW) streams, extend to the OHWM which is defined by 33 CFR 328.3(e) as:

> *...that line on the shore established by the fluctuation of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.*

On January 9, 2001, the U.S. Supreme Court ruled that the USACE jurisdiction does not extend to previously regulated isolated waters (in *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers* - SWANCC), including but not limited to isolated ponds, reservoirs, and wetlands. Examples of isolated waters that are affected by this ruling include vernal pools, stock ponds, lakes (without outlets), playa lakes, and desert washes that are not tributary to navigable or interstate waters or to other jurisdictional waters.

A joint guidance by the U.S. Environmental Protection Agency (EPA) and the USACE was issued on June 5, 2007, to clarify circumstances where a CWA Section 404 permit would be required before conducting activities in wetlands, tributaries, and other waters. This guidance is consistent with the Supreme Court's decision in the consolidated cases *Rapanos v. United States* and *Carabell v. United States* (126 S. Ct. 2208 (2006)) ("Rapanos"), which address the jurisdiction over waters of the United States under the Clean Water Act (33 U.S.C. §1251 et seq.). This Rapanos guidance does not supersede the 2003 guidance interpreting SWANCC, and the agencies will continue to evaluate jurisdiction over isolated waters on a case-by-case basis.

The USACE will continue to assert jurisdiction over TNWs, wetlands adjacent to TNWs, non-navigable tributaries of TNW that are (RPW) where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months), and wetlands that directly abut such tributaries.

The USACE will use fact-specific analysis to determine whether waters have a significant nexus with traditional navigable water for non-navigable tributaries that are not relatively permanent (non-RPW), wetlands adjacent to non-navigable tributaries that are not relatively permanent, and wetlands adjacent to, but that does not directly abut, a relatively permanent non-navigable tributary. According to USACE, *"a significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by all wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical and biological integrity of downstream traditional navigable waters,"* including consideration of hydrologic and ecologic factors. A primary component of this determination lies in establishing the connectivity or non-connectivity of the subject drainages to a TNW; therefore, the drainages of the project site must be analyzed from their origins to their terminus for any USACE jurisdictional determination.

In May 2007, the USACE and EPA jointly published and authorized the use of the *Jurisdictional Determination Form Instructional Guidebook* (USACE 2007). The form and guidebook define how to determine if an area is USACE jurisdictional, and if there is a significant nexus per the Rapanos decision. A nexus is defined as some property of a drainage that has an effect on the physical, chemical, or biological integrity of a downstream TNW. A nexus must have more than insubstantial and speculative effects on the downstream TNW to be considered a significant nexus.

Regional Water Quality Control Board Jurisdictional Criteria

The State of California (State) regulates discharge of material into waters of the State pursuant to Section 401 and 402 of the CWA and the California Porter-Cologne Water Quality Control Act (California Water Code, Division 7, §13000 et seq.). Porter–Cologne reserves the right for the State of California to regulate activities that could affect the quantity and/or quality of surface and/or ground waters, including isolated wetlands, within the State. Waters of the State determined to be jurisdictional for these purposes require, if impacted, waste discharge requirements and a 401 Certification (in the case of the required USACE permit). The State Water Resources Control Board (SWRCB) and the local RWQCB are the relevant permitting agencies. Limits of jurisdiction include wetland boundaries and the OHWMs of TNWs, RPWs, and non-RPWs.

California Department of Fish and Game Jurisdictional Criteria

Pursuant to Division 2, Chapter 6, Sections 1600-1602 of the California Fish and Game Code, the CDFG regulates all diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake, which supports fish or wildlife. Potential CDFG jurisdictional riparian habitats were evaluated using the guidance described in *A Field Guide to Lake and Streambed Alteration Agreements Sections 1600-1607* (CDFG 1994).

CDFG defines a "stream" (including creeks and rivers) as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having surface or subsurface flow that supports or has supported riparian vegetation." CDFG's definition of "lake" includes "natural lakes or man-made reservoirs." CDFG limits of jurisdiction include the maximum extents of the uppermost bank-to-bank distance or riparian vegetation dripline.

CDFG jurisdiction within altered or artificial waterways is based upon the value of those waterways to fish and wildlife. CDFG Legal Advisor has prepared the following opinion:

- Natural waterways that have been subsequently modified and that have the potential to contain fish, aquatic insects, and riparian vegetation will be treated like natural waterways; and
- Artificial waterways that have acquired the physical attributes of natural stream courses and which have been viewed by the community as natural stream courses should be treated as natural waterways.

Artificial waterways without the attributes of natural waterways should generally not be subject to Fish and Game Code provisions.

2.5.2 Field Survey

Field surveys were conducted from March 9 to March 17, 2009, by Chambers Group biologists Paul Morrissey and Saraiah Skidmore. Drainages were mapped during protocol level focused desert tortoise surveys.

In the field, boundaries and dimensions of jurisdictional features were recorded on a GPS unit, topographic maps, aerial photographs, and/or field notes. Features within the Project site were investigated for the presence of drainages, water bodies, riparian habitats, potential wetlands, and connectivity. Connectivity was ground-truthed by walking the entire Project site (Figure 5) and following the drainages from their origins to their terminal points. Photos were also taken along the Project site to detail connectivity.

Regardless of whether the drainages exhibited the potential to be three-parameter wetlands (i.e., vegetation, soils, and hydrology), representative drainages were investigated and recorded onto standardized Jurisdictional Determination – Arid West Region Data Sheets and Rapanos forms. In order to formally determine the presence or absence of wetlands, site features were recorded onto the standardized data sheets. Recorded data included plant species with percent covers, soil profiles in dug soil pits, and evidence of hydrology.

Potential USACE / RWQCB / CDFG jurisdictional areas were field-checked for the presence of definable channels and/or wetland vegetation, riparian habitat, soils, and hydrology. The lateral extent of a jurisdictional drainage is measured in several ways, depending on the particular situation. In the absence of a defined wetland, the USACE and the RWQCB traditionally use the determination of the presence of a bed and bank to the upper limit of the OHWM. Under the Rapanos court decision, the USACE now requires a fact-specific significant nexus analysis to be performed for dry or ephemeral washes (non-RPWs) in southern California to determine the extent of USACE jurisdiction on a given project site.

Potential wetland habitats were evaluated using the methodology set forth in the 1987 Wetland Manual. The 2006 Arid West Supplement was in effect at the time this survey commenced and was therefore applied to this Project. Features with no evidence of wetland hydrology, and which supported only upland vegetation, were evaluated for the upward limits of jurisdiction and not exclusively for wetland parameters.

The RWQCB includes all USACE jurisdictional areas, OHWMs in non-RPWs, isolated wetlands, and any other feature that has an effect on surface or subsurface water quality within California. The CDFG takes jurisdiction to the top of the bank on either side of the drainage or to the outer edge of all riparian vegetation, whichever measurement is greater. This edge, as determined by the "dripline" of the riparian canopy, is used as the line of demarcation between riparian and upland habitats. On smaller streams or dry washes with little or no riparian habitat, the top of the bank is used to mark the lateral extent of CDFG jurisdictional drainage. Drainage widths were measured in feet for jurisdictional acreage calculations. Reference photographs were taken during this survey and are included as Appendix G.

Jurisdictional Determination – Arid West Region Data Sheets and Rapanos forms were used to record data and to assist in the determination of the wetland characteristics for each individually numbered soil pit (Appendix H). Data points and soil pits were recorded and used to delineate the wetland boundaries. Additional test pits were dug throughout the Subject Drainage to confirm the presence of hydric soils. All delineations were digitized for the precise mapping of jurisdictional areas. Where no wetlands were present, the lateral limits of USACE / RWQCB / CDFG jurisdiction were measured and recorded onto high-resolution aerial photographs and field notes. All data on jurisdictional and wetland delineations were reproduced using Geographic Information System (GIS) software and displayed on aerial maps for this report (Figure 6).

2.5.3 Vegetation

For the wetland delineation, plants were categorized according to their probabilities to occur in wetlands versus non-wetlands in accordance with the categories in the *National List of Species that Occur in Wetlands* (Reed 1988). More specifically, the California Land Resource Region (Region 0) wetlands plant list was used, which is a regional adaptation of the *National List*. The wetland species categories are:

I. **Obligate Wetland (OBL)** – Occur almost always (estimated probability >99 %) under natural conditions in wetlands.

II. **Facultative Wetland (FACW)** – Usually occur in wetlands (estimated probability 67 % to 99 %), but occasionally found in non-wetlands.

III. **Facultative (FAC)** – Equally likely to occur in wetlands or non-wetlands (estimated probability 34 % to 66 %).

IV. **Facultative Upland (FACU)** – Usually occur in non-wetlands (estimated probability 67 % to 99 %), but occasionally found in wetlands.

V. **Obligate Upland (UPL)** – May occur in wetlands in another region, but occur almost always (estimated probability >99 %) under natural conditions in non-wetlands in southern California. All species not listed on the *National List of Species that Occur in Wetlands* (Reed 1988) are considered to be UPL.

VI. **No Indicator (NI)** – NI is recorded for those species for which insufficient information was available to determine an indicator status.

Plant species and absolute percent covers were recorded by stratum (i.e., tree, sapling/shrub, herb, woody vine) and evaluated for dominance and prevalence according to guidelines in the 1987 Wetland

Manual and Arid West Supplement. Naming conventions followed *The Jepson Desert Manual; Vascular Plants of Southeastern California* (Baldwin et al. 2002).

2.5.4 Soils

Soil pits were dug in representative delineated features on the Project site, and soils were evaluated according to guidelines in the 1987 Wetland Manual and Arid West Supplement. Soil layers were examined for the presence or absence of hydric soil indicators and oxidation/reduction features indicative of a history of saturated soil conditions.

2.5.5 Hydrology

Typical hydrologic indicators were observed per the 1987 Wetland Manual and Arid West Supplement guidelines. Indicators include evidence of inundation, saturation, high water table, watermarks, drift lines, sediment deposits, surface soil cracks, water-stained leaves, biotic crust, aquatic invertebrates, hydrogen sulfide odor, and the presence or oxidation/reduction features in the soil, among several others.

Consideration of the climate and flow frequency is given when observing watermarks and drift lines. For the purpose of determining hydrologic connectivity to a TNW, aerial photos, NWI maps, and USGS quad maps were referenced; and all features were inspected in the field on and offsite for true connectivity.

SECTION 3.0 – RESULTS

3.1. SOILS

The USDA Soil Conservation Service and USDA NRCS Web Soil Survey has not mapped soils within the Project site (USDA 2009). No Order III soil survey has been conducted on or in the vicinity of the proposed Project area. Data derived from the State's soil geographic database (STATSGO) has limitations. STATSGO (Order V) in particular was meant for regional planning purposes with large scale extrapolation from other sources. With very limited ground-truthing, these data have limited application. The 1970 General Soil Map for the SW Desert Area, San Bernardino County, has mapped and described the soils within the project area as the Arizo-Daggett Association (excessively drained and somewhat excessively drained, very deep, gravelly soils). The following includes a description of soils identified during the reconnaissance level survey.

The Project site consists primarily of sandy loam soils on the flat terraces, loamy sandy soils, and loamy sand within the drainages and washes. The loamy sandy soils were more prevalent in the northern portion of the Project site and in the eastern area along the washes. Overall, these are well drained soils typical of sandy environments. A layer of caliche rock was exposed in some areas of the washes and dirt roads, and desert pavement type soils were observed in patches throughout the western area of the site; these substrates were unvegetated. There were no limestone outcroppings or carbonate soils present, no blowsand or deep stabilized dunes observed, and no gypsum soils were present onsite. These soil types are known to support certain special status plant species in this area.

3.2. VEGETATION

Based on the reconnaissance-level and protocol-level focused plant surveys performed by Chambers Group, 103 plant species have been documented within the Project site (Appendix A). Although species richness (the number of species in given area) of perennial shrubs in the Mojave desert is typically low, the richness of annual desert wildflowers can be quite high during a good rainfall year. The number of species observed by Chambers Group botanists onsite during the focused plant survey is not a reflection of ecosystem health, but rather dependent upon the time of year in which the survey was conducted. Richness may be higher during early spring months or during above-average rainfall years, however the surveys were conducted in late spring to capture the blooming periods of special status plant species with a potential to occur onsite.

3.2.1 Vegetation Communities Descriptions

At the time of the reconnaissance-level survey, the Project site was primarily composed of creosote and white bursage desert scrub, desert wash, and disturbed plant communities (Figure 3). Riparian Scrub was not identified on the site. Representative site photographs were taken to document site conditions during the survey (Appendix F). The following section summarizes the principal characteristics of the vegetation communities observed onsite in March 2009.

Creosote Bush-White Bursage Series (319 acres)

The Creosote Bush-White Bursage Series is an extremely xeromorphic (i.e., plants adapted for survival in dry conditions) mixed evergreen-deciduous shrubland that typically consists of well-drained secondary soils with very low available water holding capacity. The community typically is found on slopes, fans, and in valleys at elevations up to 3,300 feet amsl (Sawyer and Keeler-Wolf 1995). This community type is dominated by creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*), with creosote bush occupying 55 percent and white bursage occupying 45 percent of the total vegetative cover in this portion of the Project site. The total vegetative cover by perennials was approximately 45 percent. The substrate onsite consists of sandy loam and loamy sand. Often, many species of ephemeral herbs in this community will flower in late March and April if the winter rains are sufficient. Numerous annual species, still in the vegetative state prior to the onset of flowers, were observed in this community in March and bloomed in April and through the first part of May 2009.

Creosote Bush-White Bursage Series is present throughout the eastern portion of the Project site. In addition to creosote bush and white bursage, other common plant species found on the Project site typical of this vegetation community include: common fiddleneck (*Amsinckia menziesii*), blackbush (*Coleogyne ramosissima*), Nevada ephedra (*Ephedra nevadensis*), winter fat (*Krascheninnikovia lanata*), box-thorn (*Lycium* sp.), blazingstar species (*Mentzelia* spp.), golden cholla (*Opuntia echinocarpa*), big galleta grass (*Pleuraphis rigida*), and Joshua tree (*Yucca brevifolia*).

White Bursage Series (176 acres)

White Bursage Series, described by Sawyer and Keeler-Wolf (1995), is a mixed evergreen-deciduous shrubland dominated by white bursage with creosote bush also present in lower proportion. The shrub canopy, typically less than 10 feet in height, is two-tiered with few creosote bush shrubs in the upper tier over the lower tier consisting of white bursage. The ground layer is open with annual species seasonally present. The White Bursage Series typically occurs on alluvial fans, or at the base of a mountain where several alluvial fans have merged (bajadas), stabilized sand fields, and upland slopes with well-drained soils at elevations up to 4,000 feet amsl. The substrate onsite is gravelly sand with small patches of desert pavement scattered throughout this community. The ground appeared more compacted and with larger soil particles in this series than was observed in the Creosote Bush-White Bursage Series onsite.

White Bursage Series is present on the northwestern portion of the Project site. In contrast to the Creosote Bush-White Bursage Series where creosote bush and white bursage exhibited similar cover values, the White Bursage Series is comprised of 75 percent white bursage and only 25 percent creosote bush of the total vegetative cover (approximately 35 percent) within this portion of the site. In addition to these species, other common plant species found onsite typical of the White Bursage Series include: Nevada ephedra, Pima rhatany (*Krameria erecta*), and box-thorn. Less common species found within this community include: common fiddleneck, wingnut cryptantha (*Cryptantha pterocarya*), flat-topped buckwheat (*Eriogonum deflexum*), California buckwheat (*Eriogonum fasciculatum*), wishbone bush (*Mirabilis* sp.), phacelia (*Phacelia* sp.), big galleta grass, and Joshua tree. Joshua tree is less abundant in this portion of the site than within the Creosote Bush-White Bursage Series.

Desert Wash (18 acres)

Desert Wash habitats are characterized as sandy or gravelly drainages and arroyos of the lower Mojave and Colorado deserts. This community closely resembles the Mojave Wash Scrub as described by Holland (1986). These washes typically have braided channels that rearrange with every surface flow event. The substrate of the Desert Wash area onsite consists of loose sandy soil with very little ground cover.

Desert Wash is present in the northeastern corner of the Project site and along the eastern edge of the site. The Desert Wash environments support a larger diversity of plant species than is found throughout other portions of the Project site. The Desert Wash community onsite is dominated by cheesebush (*Hymenoclea salsola*) and blunt tansymustard (*Descurainia pinnata* ssp. *glabra*), with white bursage, Nevada ephedra, creosote bush, desert alyssum (*Lepidium fremontii* var. *fremontii*), and sandpaper plant (*Petalonyx thurberi*) also common. Other less frequently occurring species in the Desert Wash include common fiddleneck, four-wing saltbush (*Atriplex canescens*), blackbush, wingnut cryptantha, bladderpod (*Isomeris arborea*), scalebroom (*Lepidospartum squamatum*), golden cholla, big galleta grass, London rocket (*Sisymbrium irio*), and occasional Joshua trees.

Disturbed (Sparsely Vegetated, 5 acres)

Portions of the site that are classified as Disturbed are those areas that are either devoid of vegetation (cleared or graded) such as dirt roads or those heavily compacted areas that are dominated by a sparse cover of ruderal vegetation. Disturbed Areas are present within the Project along the major, named dirt roads, in portions of the dry washes where scouring has taken place, in large areas of desert pavement, and on sediment berms throughout the site. Only sparse vegetation is found growing in these areas. Species growing in Disturbed areas include stunted white bursage shrubs, red-stemmed filaree (*Erodium cicutarium*), sapphire eriastrum (*Eriastrum sapphirinum*), and Mediterranean schismus.

3.2.2 Special Status Plant Species

The literature review resulted in a list of 31 special status plant species that have been known to occur in the area of the Lucerne Valley. The following 19 special status plant species are considered **absent** from the Project site due to a lack of suitable habitat present, no species typically associated with these plants were observed onsite (e.g., *Cordylanthus tecopensis* per California Native Plant Link Exchange 2009), or because the species occurs outside the elevation range found on the Project site:

- Parish's rock cress (*Arabis parishii*) – CNPS List 1B.2;
- Shockley's rock cress (*Arabis shockleyi*) – CNPS List 2.2; limestone endemic;
- Cushenbury milk-vetch (*Astragalus albens*) – **FE,** CNPS List 1B.1; limestone endemic;
- black milk-vetch (*Astragalus funereus*) – BLM, CNPS List 1B.2;
- flat-seeded spurge (*Chamaesyce platysperma*) – CNPS List 1B.2;
- Tecopa bird's beak (*Cordylanthus tecopensis*) – BLM, CNPS List 1B.2;
- Cushenbury buckwheat (*Eriogonum ovalifolium* var. *vineum*) – **FE,** CNPS List 1B.1; limestone endemic;
- Kingston bedstraw (*Galium hilendiae* ssp. *kingstonense*) – BLM, CNPS List 1B.3;
- Kingston Mountains ivesia (*Ivesia patellifera*) – BLM, CNPS List 1B.3;
- Robison monardella (*Monardella robisonii*) – BLM, CNPS List 1B.3;
- little mousetail (*Myosurus minimus* ssp. *apus*) – CNPS List 3.1;
- white-margined beardtongue (*Penstemon albomarginatus*) – BLM, CNPS List 1B.2; stabilized dunes, sand, and in washes;
- Stephen's beardtongue (*Penstemon stephensii*) – BLM, CNPS List 1B.3; desert mountains;

- Parish's phacelia (*Phacelia parishii*) – BLM, CNPS List 1B.1; typically found on playas in clay or alkaline soils;
- Parish's popcorn-flower (*Plagiobothrys parishii*) – CNPS List 1B.1;
- Parish's alkali grass (*Puccinellia parishii*) – BLM, CNPS List 1B.1; wetland obligate; Rabbit Springs;
- salt spring checkerbloom (*Sidalcea neomexicana*) – CNPS List 2.2; wetland species;
- bird-foot checkerbloom (*Sidalcea pedata*) – **FE, SE,** CNPS List 1B.1; and
- white-margined oxytheca (*Sidotheca emarginata*) – CNPS List 1B.3.

After conducting the reconnaissance survey and determining that suitable habitats were present onsite, 12 of the 31 special status species were considered to have a potential to occur on the Project site. A protocol-level focused plant survey was recommended and subsequently conducted. The survey for these 12 species was completed in May 2009, when these species were in bloom and would be both evident and identifiable at the time of the survey. The protocol level focused plant survey for the 12 species was negative. No federal or state-listed as threatened or endangered or otherwise sensitive species were observed onsite. Many of the special status plant species with a potential to occur onsite require specific soil types that are not characteristic of the Project site. The information presented on these 12 species is summarized in a PFO table (Appendix J).

There were multiple seedlings of an *Astragalus* species present onsite at the time of the protocol-level focused plant survey in May, which possessed similar vegetative characters to the Cushenbury milk-vetch (a special status plant). However, these seedlings did not have any flowers or fruits present on the plant in May to positively identify the species. Botanists re-visited the site on June 26, 2009 and were able to confirm that the unknown seedlings were not the sensitive Cushenbury milk-vetch. The seedlings onsite had 13 to 17 leaflets per compound leaf; Cushenbury milk-vetch only has 5 to 9 leaflets per leaf. Botanists also visited the Box S Springs location where a reference population for the Cushenbury milk-vetch was recorded in 1989 less than 4 miles southwest of the Project site (CDFG 2009). The habitat at the reference site was rocky and very different from that found at the Project site, which suggests that suitable habitat for the Cushenbury milk-vetch is not present on the Project site.

Rainfall on the site was above the average monthly precipitation amount for November and only slightly below the average for December (Table 3). The amount of rainfall received in April 2009 allowed for a high diversity of annual plant species to germinate by May 2009 on the Project site; however, this rainfall amount may not have been sufficient to allow for early-blooming and short-lived special status plant species to germinate at all or persist into May.

Table 3 Lucerne Valley Precipitation

	Total Precipitation from November 2008 to April 2009 (inches)[1]	Average Precipitation (inches)[2]
November	0.65	0.36
December	0.70	0.81
January	none	1.11
February	0.84	1.18
March	none	1.14
April	0.16	0.31

[1] Data collected from the Lucerne Valley Station near corner of Visalia Ave. and Sutter Ave. (Weather Underground 2009).

[2] Data collected from Lucerne Valley (The Weather Channel Interactive, Inc. 2009).

Based on the literature review and reconnaissance-level survey, the following three species had a **low** potential to occur on the Project site due to marginally suitable habitat present in the desert wash areas, or because the species typically occurs at elevations above those which were found onsite. However, the results of the protocol level focused plant survey for these species were negative. The following species, which would have been flowering or conspicuous at the time of the protocol level focused plant survey, are therefore considered **absent** from the Project site:

- desert cymopterus (*Cymopterus deserticola*) – BLM, CNPS List 1B.2; grows in blowsand;

Desert cymopterus is a BLM sensitive and CNPS List 1B.2 species. This perennial herb flowers between March and May in fine to coarse, well-drained sandy soils and flats of Joshua Tree Woodland and Mojavean Desert Scrub. Known ranges include: Kern, Los Angeles, and San Bernardino counties. Military activities, sheep grazing, vehicles, utility constructions, and urbanization are some of the threats to desert cymopterus.

Moderately suitable habitat is present throughout the site within the Creosote Bush-White Bursage Series, Desert Wash and White Bursage Series. No historical populations have been recorded within 10 miles of the site. This species was not observed onsite during the protocol-level focused plant survey and is considered absent.

- forked buckwheat (*Eriogonum bifurcatum*) – BLM, CNPS List 1B.2; typically grows in sandy saline soils; and

Forked buckwheat is a BLM sensitive, and CNPS List 1B.2 species. This annual herb flowers between April and June typically in sandy soils of Chenopod Scrub habitat. This species typically occurs at elevations between 2,290 to 2,660 feet amsl. Chambers Group has adopted the convention to not exclude a plant species solely based on elevation ranges unless that species has a range outside a buffer of 800 feet of the reported elevation as well. The range for this species occurs within the 800-foot elevation buffer for the site. The known range of the forked buckwheat exists in Inyo and San Bernardino counties in California and into Nevada.

Marginally suitable habitat is present in the Desert Wash areas along the eastern edge of the Project site. No historical populations have been recorded within 10 miles of the Project site. This species was not observed onsite during the protocol-level focused plant survey and is considered absent.

- Barstow woolly-sunflower (*Eriophyllum mohavense*) – BLM, CNPS List 1B.2; found on caliche and shallow soils.

Barstow woolly sunflower is a BLM sensitive and CNPS List 1B.2 species. This annual herb flowers between April and May in open sandy or silty areas of Chenopod Scrub, Mojavean Desert Scrub, and playas at elevations between 1,600 and 3,200 feet amsl. Known ranges include: Fresno, Kern, Los Angeles, and San Bernardino counties. This species is threatened by energy development, road improvements, vehicles, and grazing.

Moderately suitable habitat is present throughout the site in the Creosote Bush-White Bursage Series, Desert Wash, and White Bursage Series. No historical populations have been recorded within 10 miles of the Project site. This species was not observed onsite during the protocol-level focused plant survey and is considered absent.

Based on the literature review, the following seven species had a **moderate** potential to occur onsite due to the presence of suitable habitat. However, the results of the protocol-level focused survey for these species were negative. The following species, which would have been flowering or conspicuous at the time of the protocol level focused plant survey, are therefore considered **absent** from the Project site:

- alkali mariposa lily (*Calochortus striatus*) – BLM, CNPS List 1B.2; grows in saline soils, typically in seeps;

Alkali mariposa lily is a BLM sensitive and CNPS List 1B.2 species. This bulbiferous herb flowers from April to June in alkaline meadows, spring areas, and ephemeral washes of Chaparral, Chenopod Scrub, and Mojavean Desert Scrub at elevations between 230 to 5,200 feet amsl. Known ranges include: Kern, Los Angeles, San Bernardino, and Tulare counties and Nevada. This species is threatened by urbanization, grazing, trampling, road construction, and lowering of water table.

Mojavean Desert Scrub and ephemeral wash habitat is present within the Desert Wash located onsite. Although the soil onsite did not appear to be alkaline, there were several four-wing saltbush shrubs (which are salt tolerant) within the wash that may suggest some level of alkalinity. In addition, two known occurrences of this species have been identified within 10 miles of the Project site at Cushenbury Springs and Rabbit Springs (CDFG 2009). However, this species was not observed onsite during the protocol-level focused plant survey and is considered absent.

- Parish's daisy (*Erigeron parishii*) – **FT,** CNPS List 1B.1; limestone endemic;

Parish's daisy is a federal-listed threatened and CNPS List 1B.1 species. This perennial herb flowers between May and June on dry rocky slopes, typically on limestone alluvium, in Mojavean Desert Scrub, and Pinyon-Juniper Woodland at elevations between 2,600 and 6,600 feet amsl. San Bernardino County is the only known county where Parish's daisy is found. This species is threatened by carbonate mining, vehicles, and residential development.

Potentially suitable habitat is present within the Creosote Bush-White Bursage Series or the White Bursage Series onsite. Two known occurrences of this species have been recorded within 5 miles of the Project site near Highway 18 at Camp Rock Road (CDFG 2009). However, this species was not observed onsite during the protocol-level focused plant survey and is considered absent.

- Mojave monkeyflower (*Mimulus mohavensis*) – BLM, CNPS List 1B.2;

The Mojave monkeyflower is a BLM sensitive and CNPS List 1B.2 species and is a California endemic. This annual herb flowers between April and June and is found in dry, sandy, and gravelly areas, washes, and between or against rocks. Habitat includes Mojavean Scrub and Joshua Tree Woodland at elevations between 2,000 and 4,000 feet amsl. The known range of this species exists in San Bernardino County. This species is threatened by development, mining, vehicles, and competition with non-native plants.

Suitable habitat is present throughout the Project site, but this species is most likely to be found within the Creosote Bush-White Bursage Series or the White Bursage Series. In addition, historical populations have been recorded along Old Woman Springs Road (CDFG 2009) slightly more than 5 miles from the Project site. However, this species was not observed onsite during the protocol-level focused plant survey and is considered absent.

- short-joint beavertail (*Opuntia basilaris* var. *brachyclada*) – BLM, CNPS List 1B.2;

Short-joint beavertail is a BLM sensitive and CNPS List 1B.2 species. This stem succulent flowers between April and June on dry slopes and washes. Habitat includes Chaparral, Joshua Tree Woodlands, Mojavean Desert Scrub, and Pinyon-Juniper Woodland at elevations between 1,400 to 7,500 feet amsl. The known range of this species exists in Los Angeles and San Bernardino counties. This species is threatened by urbanization, mining, horticultural collecting, grazing, and vehicles.

Suitable habitat is present within the Creosote Bush-White Bursage Series or the White Bursage Series onsite. No historical populations are recorded within 10 miles of the Project site. This species was not observed onsite during the protocol-level focused plant survey and is considered absent.

- Death Valley beardtongue (*Penstemon fruticiformis* var. *amargosae*) – BLM, CNPS List 1B.3;

Death Valley beardtongue is a BLM sensitive and CNPS List 1B.3 species. This perennial herb flowers between April and June on gravelly washes and canyon floors. Habitat includes Mojavean Desert Scrub at elevations between 2,800 feet to 4,600 feet amsl. The known range of this species exists in Inyo and San Bernardino counties and Nevada.

Suitable habitat is present throughout the site, but this species is most likely to be found within the Desert Wash present onsite. No historical populations are recorded within 10 miles the site. This species was not observed onsite during the protocol-level focused plant survey and is considered absent.

- Death Valley sandpaper plant (*Petalonyx thurberi* ssp. *gilmanii*) – BLM, CNPS List 1B.3; and

Death Valley sandpaper-plant is a BLM sensitive and CNPS List 1B.3 species and is endemic to California. This evergreen shrub flowers between May and September and is found in sandy washes, canyons, dunes, and slopes. Habitat includes Desert Dunes and Mojave Desert Scrub at elevations between 850 and 4,700 feet amsl. The known range of this species exists in Inyo and San Bernardino counties.

Suitable habitat is present throughout the site, but this species is most likely to be found within the Desert Wash present onsite. No historical populations are recorded within 10 miles of the site. This species was not observed onsite during the protocol-level focused plant survey and is considered absent.

- Latimer's woodland-gilia (*Saltugilia latimeri*) – CNPS List 1B.2; typically grows at elevations above the Project site.

Latimer's woodland-gilia is a CNPS List 1B.2 species. This annual herb flowers between March and June and is found in rocky or sandy, often granitic soils and sometimes in washes in Chaparral, Mojavean Desert Scrub, and Pinyon-Juniper Woodland at elevations between 1,310 and 6,235 feet amsl. The known range of this species exists in Inyo, Kern, Riverside, and San Bernardino counties. This species is known from fewer than 20 occurrences (CDFG 2009).

Suitable habitat may be present within Desert Wash present on the Project site even though this species typically is found at elevations above the elevation of the site. No known occurrences of this species have been recorded within 10 miles of the Project site. This species was not observed onsite during the protocol-level focused plant survey and is considered absent.

Based on the literature review, the following two species had a **moderate** potential to occur onsite due to the presence of suitable habitat. Neither species was observed onsite during the protocol-level focused plant survey when they were reported to be flowering (CNPS 2009). Due to the below average rainfall received in Lucerne Valley during Spring 2009, because these two species can flower as early as March, and because these very short-lived annuals are also very small (less than 1 ¼-inches in height), the white-pygmy poppy and the Little San Bernardino Mountains linanthus may not have germinated or may not have persisted into May when the survey was conducted. These two species therefore cannot be confirmed absent from the Project site and continue to have a **moderate** potential to occur onsite:

- white pygmy-poppy (*Canbya candida*) – CNPS List 4.2; and

White pygmy poppy is a CNPS List 4.2 species. This annual herb flowers between March and June in gravelly, sandy, or granitic soils of Joshua Tree Woodland, Mojavean Desert Scrub, and Pinyon-Juniper Woodland. Known ranges include: Imperial, Inyo, Kern, Los Angeles, and San Bernardino counties. This species is threatened by development, vehicles, grazing, mining, and non-native plants.

Suitable habitat is present throughout much of the site in the Creosote Bush-White Bursage Series and the White Bursage Series. No historical populations have been recorded within 10 miles of the Project site. This has species a moderate potential to occur onsite.

- Little San Bernardino Mountains linanthus (*Linanthus maculatus*) – BLM, CNPS List 1B.2.

Little San Bernardino Mountains linanthus is a CNPS List 1B.2 species and is a California endemic. This annual herb flowers between March and May and is found in sandy soils of Mojavean Desert Scrub, Desert Dunes, Sonoran Desert Scrub, and Joshua Tree Woodland at elevations between 635 and 6,810 feet amsl. The known range of this species exists in Riverside, San Bernardino, and San Diego counties. This species is threatened by development, vehicles, and dumping.

Suitable habitat is present throughout the Project site, but this species is most likely to be found within the Creosote Bush-White Bursage Series. Historical populations have been found in Rattlesnake Canyon in Yucca Valley, but not within 10 miles of the Project site. This species has a moderate potential to occur onsite.

3.2.3 Succulent Species Inventory

Several succulent species have been identified within the Project boundary (Table 4). Many succulent species are considered important components to desert communities because they are long-lived and many wildlife species depend on these species for survival. Coordination with BLM will be required to determine the extent to which these succulent species will require mitigation or translocation. Recommendations are provided in Section 4.2.

Table 4 Succulents Likely Requiring Mitigation Based on Habitat Assessment

Common Name	Scientific Name	Approximate Density Onsite
cottontop cactus	*Echinocactus polycephalus* var. *polycephalus*	infrequent, less than 5 individuals
beavertail cactus	*Opuntia basilaris* var. *basilaris*	occasional, 30-50 individuals
Joshua trees	*Yucca brevifolia*	abundant, 100-200 individuals

3.2.4 Location of Non-Native Invasive Weed Species

The overall density of weed species throughout the Project site was very low. Populations of weeds were concentrated along dirt roads or adjacent to home sites. There were five non-native invasive weed species for which locations were recorded onsite (Table 5). These species include: Sahara mustard, London rocket, Russian thistle (*Salsola tragus*), red-stemmed filaree, and foxtail chess (*Bromus madritensis* ssp. *rubens*). Locations of these non-native invasive weeds identified onsite correspond to the transect lines drawn on Figure 4. In addition, cheat grass and Mediterranean schismus also were observed onsite, but locations were not recorded as control of these species would not be feasible. The abundance of cheat grass and Mediterranean schismus was low throughout the Project site relative to the abundance of native species onsite. Small patches of cheat grass and Mediterranean schismus were concentrated beneath the creosote bush shrubs onsite and only scattered in low densities between the native shrubs. The density of these two grass species within the washes onsite was very minimal to non-existent.

Table 5 Locations of Non-Native Invasive Weeds Onsite

Transect Lines*		Sahara mustard (*Brassica tournefortii*)	foxtail chess (*Bromus madritensis*)	red-stemmed filaree (*Erodium cicutarium*)	Russian thistle (*Salsola tragus*)	London rocket (*Sisymbrium irio*)
1-1	1-5	x	x	x	x	x
1-5	1-9	x	x	x		x
1-9	1-13		x	x		x
1-13	1-17		x	x	x	x
1-17	1-21		x	x	x	x
1-21	1-25	x	x	x	x	x
1-25	1-29	x	x	x	x	x
1-29	1-33		x	x	x	x
1-33	1-37	x	x	x	x	x
1-37	1-41		x	x	x	x
1-41	boundary		x	x	x	x
2-1	2-5		x	x		x
2-5	2-9		x	x		x
2-9	2-13		x	x		x
2-13	2-17		x	x	x	x
2-17	2-21	x	x	x	x	x
2-21	2-25		x	x	x	
2-25	2-29		x	x	x	
2-29	2-33		x	x	x	
2-33	2-37		x	x		
2-37	2-41		x	x		
2-41	2-49	x	x	x		
2-49	2-53		x	x		x
2-53	2-57		x	x		x

Transect Lines*		Sahara mustard (*Brassica tournefortii*)	foxtail chess (*Bromus madritensis*)	red-stemmed filaree (*Erodium cicutarium*)	Russian thistle (*Salsola tragus*)	London rocket (*Sisymbrium irio*)
2-57	2-61		x	x		x
2-61	2-65		x	x	x	x
2-65	2-69	x	x	x	x	x
2-69	2-73		x	x	x	x
2-73	2-77	x	x	x	x	x
2-77	2-81		x	x		x
2-81	2-85	x	x	x		x
2-85	boundary		x	x	x	x
2-89	2-93		x	x		x
2-93	2-97		x	x		x
2-97	2-101		x	x		x
2-101	2-105		x	x		x
2-105	2-109		x	x		x
2-109	2-113		x	x		x
2-113	2-117		x	x		x
2-117	2-121	x	x	x		x
2-121	2-125		x	x		x
2-125	2-129		x	x		x
2-129	boundary		x	x		x

* Transect Line numbers correspond to lines drawn on Figure 4.

3.3. WILDLIFE

Wildlife species observed or detected during the site survey were characteristic of the existing site conditions. A full list of the wildlife species detected within the Project area is included in Appendix C. Weather conditions during the reconnaissance-level survey included temperatures ranging from approximately 42 to 77 degrees Fahrenheit with clear skies and dry conditions. Weather conditions during the protocol level focused desert tortoise and burrowing owl surveys ranged from temperatures of 41 to 82 degrees Fahrenheit, with average winds from 0.8 to 18 miles per hour, and cloud cover from 0 to 100 percent. One rainfall event occurred on April 10, 2009; no surface water collected on the Project site during this event. Weather conditions during the avian point count surveys included temperatures of 40.5 to 61.5 degrees Fahrenheit, wind speeds of 0 to 20 miles per hour, and cloud cover of 0-35 percent.

3.3.1 Birds

Thirteen bird species were observed/detected on the Project site during the one-day reconnaissance level survey. Species included black-throated sparrow (*Amphispiza bilineata),* sage sparrow (*Amphispiza belli*), California quail (*Callipepla californica),* horned lark (*Eremophila alpestris*), mourning dove (*Zenaida macroura*), rock pigeon (*Columba livia*), black-tailed gnatcatcher (*Polioptila melanura*), ladder-backed woodpecker (*Picoides scalaris*), common raven (*Corvus corax*), European starling (*Sturnus vulgaris*), northern harrier (*Circus cyaneus*), and house finch *(Carpodacus mexicanus).* These thirteen species are commonly found in the region. In addition, one potential ostrich (*Struthio camelus*) or possibly an emu carcass was found scattered on the western area of the Project site, most likely an escaped or released pet.

BLM requires a series of avian point count transect surveys for all solar projects. The following table shows the results of the avian point count transects.

Table 6 Avian Point Counts

Species Name	Number of Detections			
	Transect #1	Transect #2	Transect #3	Transect #4
American kestrel (*Falco sparverius*)		1		
mourning dove (*Zenaida macroura*)	1	1	1	
black-chinned hummingbird (*Archilochus alexandri*)		1		
Say's phoebe (*Sayornis saya*)			2	1
California horned lark (*Eremophila alpestris*)			5	4
barn swallow (*Hirundo rustica*)		1		
common raven (*Corvus corax*)		2	2	8
black-tailed gnatcatcher (*Polioptila melanura*)		1		
Le Conte's thrasher (*Toxostoma lecontei*)	1			
sage sparrow (*Amphispiza belli*)		1	9	10
black-throated sparrow (*Amphispiza bilineata*)	20	13	17	28
Brewer's sparrow (*Spizella breweri*)			1	2
house finch (*Carpodacus mexicanus*)			2	
Total Number of Detections	**22**	**21**	**39**	**53**
Cumulative Species Richness*	**3**	**8**	**8**	**6**

*Defined as the number of native species observed during the avian point count survey for a specific transect.

No sensitive avian species were detected during the avian point count survey. Fairly even distribution of avian species was displayed within the three main vegetation habitats identified on the Project site (Creosote Bush – White Bursage Series, White Bursage Series, and Desert Wash). Transects 1 and 2 had nearly the same number of detections, Transect 3 had nearly twice as many as 1 and 2, and Transect 4 had the highest number of detections with a total of 53. Transects 2 and 3 had the highest Cumulative

Species Richness with eight species each. Although Transect 1 had the lowest Cumulative Species Richness with only three total species detected, one of the three species was a Le Conte's thrasher (*Toxostoma lecontei*), a secretive bird that is not observed often. The Le Conte's thrasher is sensitive only within the San Joaquin area (Shuford et al. 2008). The most abundant species onsite was black-throated sparrow (*Amphispiza bilineata*). Other species commonly detected were California horned lark (*Eremophila alpestris*), common raven (*Corvus corax*), and sage sparrow (*Amphispiza belli*).

Incidental avian observations onsite during the burrowing owl and desert tortoise protocol level focused surveys included northern harrier (*Circus cyaneus*), (CSC) – nesting; prairie falcon (*Falco mexicanus*), CDFG watch list – nesting; whimbrel (*Numenius phaeopus*), California gull (*Larus californicus*), short-eared owl (*Asio flammeus*) sign, Allen's or rufous hummingbird (*Selasphorus* sp.), and lesser nighthawk (*Chordeiles acutipennis*). All incidental species were observed foraging or migrating through the Project site.

3.3.2 Mammals

Seven common mammal species were observed on the Project site during the initial reconnaissance survey. Common species observed were the black-tailed jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus audubonii*), domestic dog (*Canis familiaris*), and kit fox (*Vulpes macrotis*). A property within the project site hosts approximately 5 domestic dogs within a chain linked fence, one dead dog was found buried nearby. In addition, sheep (*Ovis aries*) carcasses were observed in the western portion of the site. Two species of ground squirrels were observed on site, the Antelope ground squirrel (*Ammospermophilus leucurus*) and the round-tailed ground squirrel (*Spermophilus tereticaudus*). A site assessment for Mohave ground squirrel was conducted in May 2009 (see Section 3.3.3) by Steve Montgomery (see resume in Appendix D).

3.3.3 Special Status Wildlife Species

After a literature review and an assessment of the various habitat types on the Project site, it was determined that six special status wildlife species have the potential to occur within the Project site. Factors used to determine potential for occurrence include quality of habitat, impact of surrounding residential development, and the date and location of prior CNDDB records of occurrence. The following identifies these sensitive species and their potentials to occur. Current listing status for each species is provided after their scientific names. The information presented on these six species is summarized in a PFO table (Appendix J).

Due to the lack of recorded historical occurrences within 5 miles of the Project site, the following three species have a **low** potential for occurrence on the Project site:

- pallid San Diego pocket mouse (*Chaetodipus fallax pallidus*) – CSC; coastal slope subspecies

The pallid San Diego pocket mouse is a California Species of Concern. It is found on the margins of the Mojave Desert in California, on the northern slopes of the San Bernardino Mountains, in high elevations of eastern San Diego County, and the edge of the Colorado Desert, south to the Mexican boundary. It is especially known to occur in arid desert border areas of San Diego County, in Riverside County southwest of Palm Springs, in San Bernardino County from Cactus Flat to Oro Grande, and east to Twentynine Palms. It prefers drier environments of the higher elevations and plateaus, and it is found up to 6,000 feet in elevation at Cactus Flat, along the north slope of the San Bernardino Mountains. It tends to occur in sandy, herbaceous areas, usually in association with rocks or course gravel (Grinnell 1933, Miller and Stebbins 1964). This species is found in a wide variety of habitats, including dry alluvial fans, dry desert slopes, sparse scrublands and grasslands, grassland/chaparral/sage scrub ecotones, redshank chaparral, and Pinyon-Juniper Woodland. This species is similar in appearance to *C.f. fallax*, but is lighter in overall coloration. Population declines may be due to urban and agricultural development. The closest reported occurrence of this species within the project vicinity was 9.5 miles away in 1954. Habitat on the Project site is not of good quality for this species.

- western mastiff bat (*Eumops perotis californicus*) – CSC, BLM Sensitive

This species is a permanent resident throughout its range in southern California, southern Arizona, Texas, and south to South America. With a wingspan approaching two feet, the western mastiff bat is the largest bat species in North America. It is also unique in that its call can be readily identified with the unaided ear. It roosts in small colonies or singly in primarily natural substrates such as cliff faces, large boulders, and exfoliating rock surfaces (Jameson et al. 1988). It is less commonly found in artificial structures such as buildings and roof tiles. It is found in a wide variety of habitats, including desert scrub, chaparral, woodlands, floodplains, and grasslands. Reasons for observed population declines are unknown. Although this species may forage in the area, no roosting habitat occurs within the project site.

- summer tanager (*Piranga rubra*) – CSC.

The summer tanager (nesting) is a California Species of Concern. This species breeds in the southern U.S. from southwest California to the Atlantic coast as far north as New Jersey and throughout the southeast U.S. It winters from central Mexico to Brazil. It is an uncommon summer resident in riparian habitat along the lower Colorado River, and in riparian areas of southern California deserts and semi-arid lands. It is also a rare migrant in Los Angeles County, and some occurrences exist in northern California as well. In California, it breeds in riparian habitat dominated by tall willows and mature cottonwoods. In the rest of its breeding range, it is more associated with oaks. Summer tanagers feed on insects, especially bees and wasps, but feed on spiders and fruits as well. This species arrives in California in April to breed and leaves in September. Breeding season takes place from May to August with a clutch size of 3-5 eggs. Both parents care for young. Nests are built 10-40 feet above the ground on branches of willows, cottonwoods, or other riparian trees. Local population declines for this species are primarily due to the loss and fragmentation of mature willow and cottonwood stands, especially along the Colorado River. Another contributing factor includes brood parasitism by the brown-headed cowbird (*Molothrus ater*). This riparian obligate species has been observed at Cushenbury Spring, slightly more than 5 miles away. No riparian habitat occurs within the Project site.

Due to the presence of suitable habitat, but a lack of recorded historical occurrences within 5 miles of the Project site, the following species has a **low** potential for occurrence on the Project site; coordination with CDFG is recommended:

- Mohave Ground Squirrel (*Spermophilus mohavensis*) - **ST**

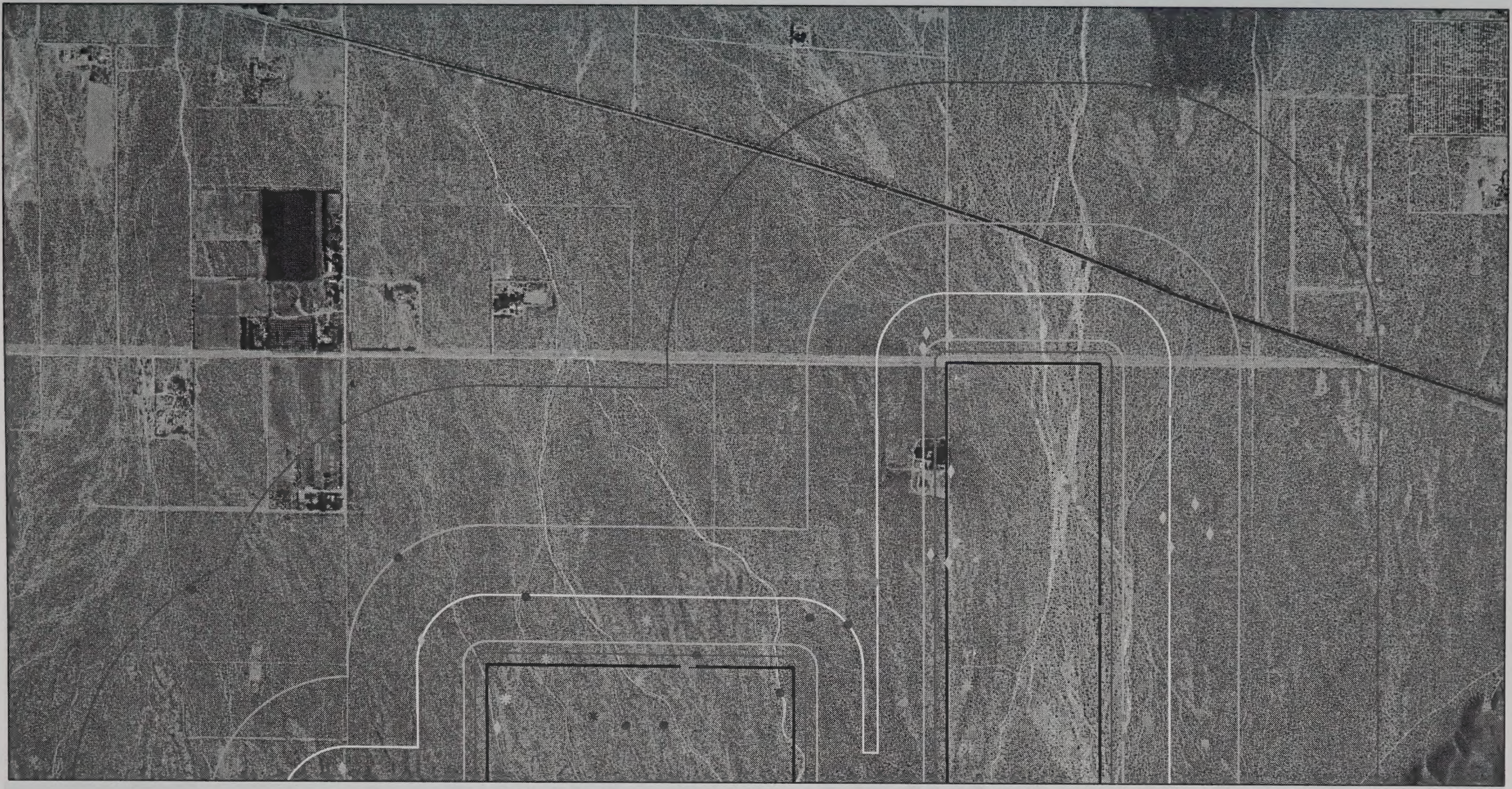
The Mohave ground squirrel is endemic, restricted to the Mohave Desert in San Bernardino, Los Angeles, Kern, and Inyo counties (CDFG 1990). The species range is from Palmdale in the southwest to Lucerne Valley in the southeast, from Olancha in the northwest to Avawatz Mountains in the northeast (Laabs 2003). They inhabit open desert scrub, alkali desert scrub, and Joshua tree communities with sandy to gravelly soils. They also will feed in annual grasslands (CDFG 1990). Mohave ground squirrels feed on green vegetation, seeds, and fruits. A study showed that most of their diet includes seeds from winter fat, spiny hopsage (*Grayia spinosa*), and saltbush (*Atriplex* sp.) (Laabs 2003). Mohave ground squirrels are active in spring and early summer (March to June) and take cover in burrows under large shrubs. Threats to this species include loss of habitat due to urbanization and agriculture and off-road vehicle use (CDFG 1990).

Habitat occurs on the Project site for the Mohave ground squirrel. The CNDDB recorded a known occurrence 8.47 miles to the northwest of the site. A known occurrence, from a personal conversation with Becky Jones (CDFG 2007), exists over five miles west from the Project site (approximately 2 miles east of the 247/18 Hwy junction). A general habitat assessment was conducted for Mohave ground squirrel by Steve Montgomery (see resume in Appendix B) to determine if habitat on the Project site may be suitable. No Mohave ground squirrels were observed or heard during a site visit on May 28, 2009 by Steve Montgomery. He revisited the site twice in early July and identified round-tailed ground squirrels off of Zircon Road. Without trapping, the presence/absence of resident Mohave ground squirrels cannot be confirmed. Although suitable habitat exists throughout the project site, the closest known occurrence is over five miles away; therefore this species has a low potential to occur on site. Based on communication with CDFG regarding this species, several trapping efforts are being conducted over 5 miles to the west of the site. Therefore, coordination with CDFG regarding this species is recommended.

Based on the literature review, burrowing owl and desert tortoise have a **moderate** to **high** potential to occur on the Project site. Protocol level focused surveys for these two species were conducted on March 24 to 27, March 31 to April 3, and April 7 to 10, 2009, by biologists Paul Morrissey, Kris Alberts, Nichole Cervin, Laura Gorman, Rebecca Alvidrez, Lisa Wadley, and Saraiah Skidmore. A subsequent protocol level focused burrowing owl survey was conducted by Heather Clayton and Nichole Cervin on June 26, 2009, at six locations that exhibited burrowing owl sign from the March/April surveys. Both desert tortoise and burrowing owl sign were observed on and near the Project site. All encounters and observations were mapped using GPS coordinates (Figure 5).

- Burrowing Owl (*Athene cunicularia*) – CSC, BLM Sensitive

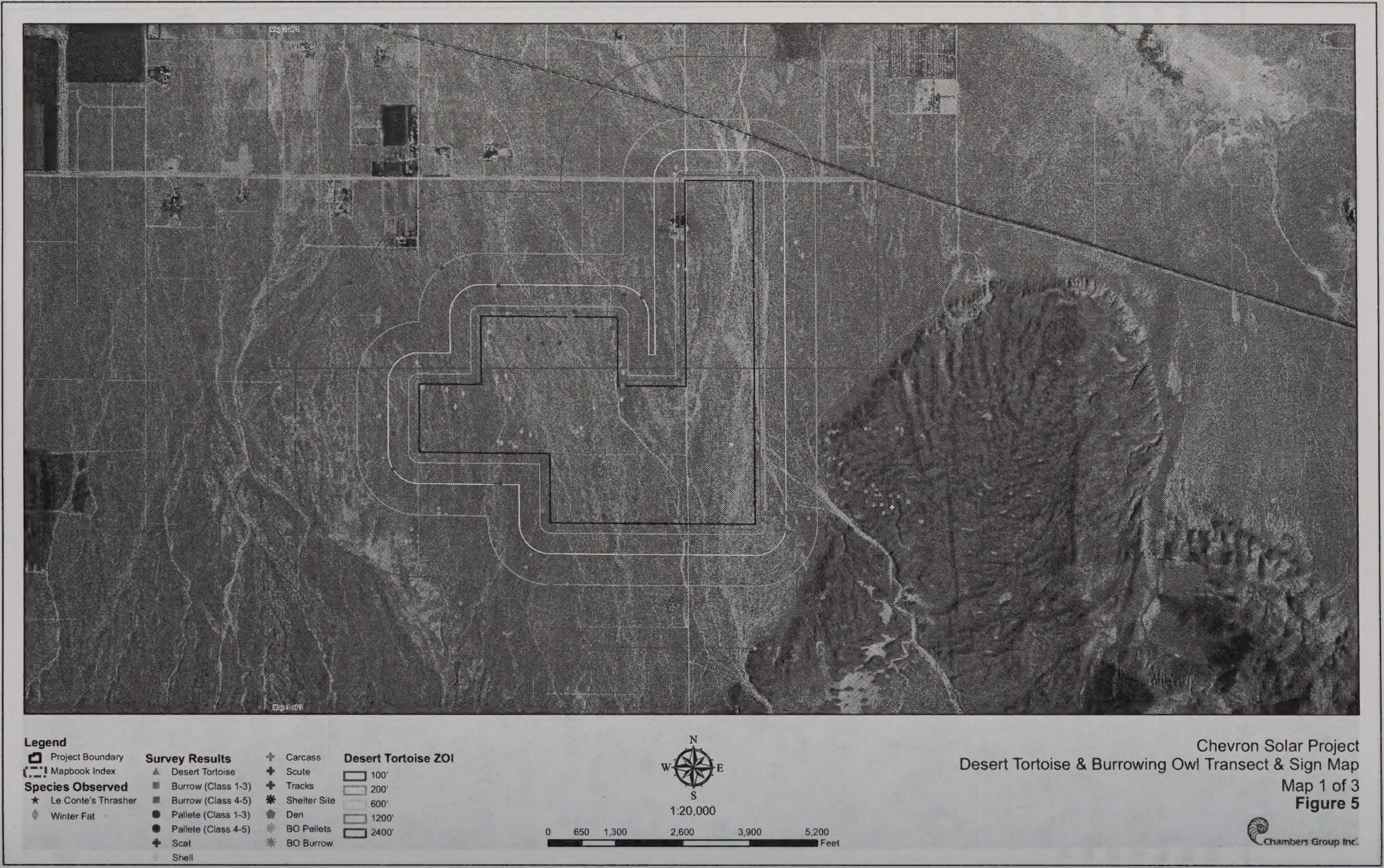
The burrowing owl is a small, ground-dwelling owl with a round, grey-brown, tuftless head, long and bare yellow legs, bright yellow iris, brown back, and buffy-white underparts with brown barring (Klute et al. 2003). Insects form the bulk of its diet in the summer, and small mammals, birds, and reptiles in the winter (Klute et al. 2003). It breeds in open plains from western Canada and the western United States, Mexico through Central America, and into South America to Argentina (Klute et al. 2003) from March through August, with peak periods in May and July. This species inhabits dry, open, native or non-native grasslands, deserts, and other arid environments with low-growing and low-density vegetation (Ehrlich and Wheye 1988). It may occupy golf courses, cemeteries, road rights-of way, airstrips, abandoned buildings, irrigation ditches, and vacant lots with holes or cracks suitable for use as burrows (TLMA 2006). It occupies mammal burrows, such as badger and prairie dog, and ground squirrel, for subterranean shelter and nesting (Trulio 1997). When burrows are scarce, the burrowing owl may use man-made structures such as openings beneath cement or asphalt pavement, pipes, culverts, and nest boxes (TLMA 2006). One burrow is typically selected for use as the nest; however, satellite burrows are usually found in the immediate vicinity of the nest burrow within the defended territory of the owl. Burrowing owls are active day and night, with peak times at dawn and dusk (Klute et al. 2003). Threats to burrowing owl populations include the loss of and destruction of habitat by agriculture and urban development, the destruction of burrows, and indirect poisoning via rodent eradication efforts (Klute et al. 2003).



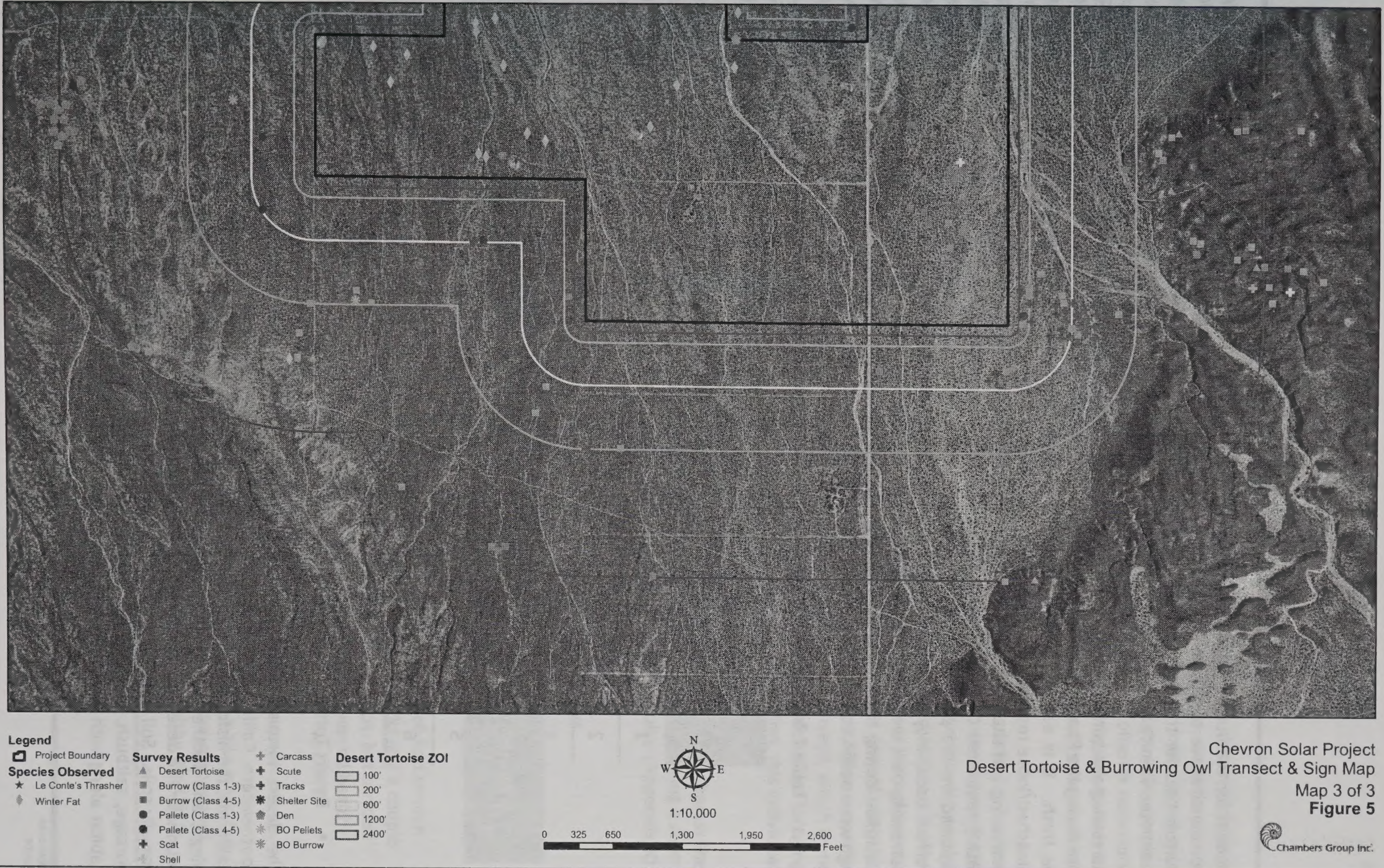
Chevron Solar Project
Desert Tortoise & Burrowing Owl Transect & Sign Map
Map 2 of 3

Figure 5

Chambers Group Inc.



Chevron Solar Project
Desert Tortoise & Burrowing Owl Transect & Sign Map
Map 1 of 3
Figure 5



Chevron Solar Project
Desert Tortoise & Burrowing Owl Transect & Sign Map
Map 3 of 3
Figure 5

Chambers Group Inc.

Habitat for the burrowing owl occurs on the Project site. Numerous ground squirrels and appropriate burrow sites were detected on the Project site, and slopes of the drainage features provide suitable burrow sites for the owl to use. Recent records report that burrowing owls have occurred historically within the vicinity of the Project site (i.e., within five miles of the Project site).

Burrowing owl burrows with white wash and regurgitated pellets were observed on and near the Project site during the Phase II Burrow and Burrowing Owl Survey. None of the burrowing owl sign appeared to be fresh. It is estimated that the sign is two to three years old due to fading white wash and bleached/loose regurgitated pellets. Table 7 contains information about the location and sign found at burrowing owl sites. As per conversation during a recent site visit (June 9, 2009), Christopher Otahal (BLM) requested Chambers Group re-survey the burrow locations in June 2009 due to sign of owls reported on the project site; June surveys would provide more information regarding the potential current occupancy of these burrows. No new sign was identified at the six burrow locations, and no burrowing owls were identified during the June 26, 2009 Burrowing Owl Survey. Since no new sign was identified during the survey, no additional surveys were recommended. No burrowing owls or recent sign were observed in 2009.

Table 7 Burrowing Owl Sign Observed During Protocol Level Focused Burrow Surveys

	Sign	Location	
		Easting	Northing
1	Burrow with white wash and pellets.	516778	3808916
2	Burrow with white wash and pellets.	517042	3809018
3	Burrow with white wash and pellets.	516369	3807745
4	Burrow with white wash and pellets.	517023	3808860
5	Burrow with white wash and pellets.	516020	3808315
6	Burrow with white wash and pellets.	517888	3808848

- Desert Tortoise (*Gopherus agassizii*) – **FT, ST**

The desert tortoise ranges from central Nevada and extreme southwestern Utah south through southeastern California and southwestern Arizona into northern Mexico (Berry et al. 2002). In California, the historic range of this species includes northeastern Los Angeles, eastern Kern, eastern San Diego, and southeastern Inyo counties, as well as most of San Bernardino, Riverside, and Imperial counties. The desert tortoise inhabits river washes, rocky hillsides, slopes, and flat deserts with sandy or gravelly soils. Soil conditions must be friable for burrow and nest construction. Creosote bush, white bursage, saltbush, Joshua tree, Mojave yucca (*Yucca schidigera*), and cacti are often present in the habitat along with other shrubs, grasses, and wildflowers. The desert tortoise is entirely herbivorous and forages on a variety of plants, including cactus species and annual vegetation. The desert tortoise is a medium-sized tortoise with an adult carapace length of about 8 to 14 inches. Males, on average, are larger than females and are distinguished by a more concave plastron, longer gular horns, larger chin glands on each side of the lower jaw, and longer tails. Carapace color varies from light yellow-brown (horn color) to dark grey-brown. In addition to range, a composite of characteristics often is necessary to distinguish the desert tortoise from other species of gopher tortoise, but its most unique feature is its very large hind feet. Desert tortoise populations are declining due to habitat destruction/loss, predation, illegal collecting, grazing, and off-highway vehicle (OHV) use (Berry 1997).

Habitat for the desert tortoise occurs on the Project site. Soil conditions appropriate for burrow construction were present onsite. Recent records report that desert tortoises have occurred historically within the vicinity of the Project site. A total of seven desert tortoises were detected during the presence/absence surveys. One live tortoise was observed within the project boundaries, in the southeast corner of the site during the protocol level focused surveys. Five live tortoises were detected within the ZOI survey area during the protocol level focused surveys, southeast of the Project site; this area is an active tortoise area. One live tortoise was observed off site in the southwest ZOI survey area during the protocol level focused surveys. During the protocol level focused plant surveys, which were subsequent to these protocol level focused desert tortoise surveys, a tortoise was identified foraging within the southeast corner of the project site; however, based on photo-documentation, this individual already had been identified during the March/April protocol level focused surveys.

During all surveys, data were recorded for each tortoise, taking care not to get too close or harass the tortoises in any way. Measurements were estimated and photos were taken at a distance using a zoom lens. Live Tortoise Encounter Forms were filled out upon observation of each tortoise (Appendix K). Information pertaining to the live desert tortoises encountered is provided in Table 6.

Table 8 Desert Tortoise Encounters During Presence/Absence Surveys

Tortoise (ID #)	Date	Original Coordinates		Age Class	Sex	Habitat	Health
		Easting	Northing				
1	3/26/09	0518964	3807854	Adult	F	Creosote Bush Scrub near 2400' ZOI transect in SE	Shell had scratch marks and a couple chips, but tortoise appeared healthy. No URTD.
2	3/26/09	0518703	3808220	Adult	F	Creosote Bush Scrub near 1200' ZOI in SE	Had a bite mark, but tortoise appeared healthy. No URTD.

Tortoise (ID #)	Date	Original Coordinates		Age Class	Sex	Habitat	Health
		Easting	Northing				
3	3/27/09	0518702	3808069	Adult	UNK	Creosote-White Bursage Series near 1200' ZOI in SE area	Old small gnaw mark above left hind leg, otherwise tortoise appeared healthy. No URTD.
4	4/1/09	0518232	3807553	Adult	UNK	Creosote-White Bursage Series in buffer in SE area	Tortoise appeared healthy. No URTD.
5	4/7/09	0518068	3807754	Adult	M	Creosote-White Bursage Series on site in SE area	Shell had small chips but tortoise appeared healthy. No URTD.
6	4/10/09	0518312	3806948	Adult	M	Creosote-White Bursage Series on 2400' ZOI in SE	Tortoise appeared healthy. No URTD.
7	4/17/09	0516223	3807569	Adult	M	Creosote-White Bursage Series near 1200' ZOI in SW	Shell had a small chip but tortoise appeared healthy. No URTD.

The seven tortoises identified during the focused presence/absence surveys all appeared healthy. No signs of upper respiratory tract disease (URTD) were observed on any of the desert tortoises identified. In addition, no major damage to the limbs or head area from predatory attacks was observed that may impair mobility or foraging capabilities.

Four skeletal remains and one carcass were observed on or near the Project site. Carcass classification is broken down into five categories, according to USFWS desert tortoise survey methodology and sign documentation protocol (USFWS 1992). Class 1 shell remains are still fresh or putrid. Class 2 shell remains are normal in color and the scutes still adhere to the bone. Class 3 shell remains have scutes that are peeling off. In Class 4 shell remains, the shell bone is falling apart, and the growth rings on the scutes are peeling. If the remains are disarticulated and scattered, the remains are Class 5. Desert Tortoise Shell and Skeletal Remains Forms are included as Appendix L. Information pertaining to the carcass and skeletal remains is provided in Table 9.

Table 9
Desert Tortoise Skeletal and Shell Remains Observed During Presence/Absence Surveys

Tortoise Remains (ID)	Class	Location		MCL (mm)	Time Since Death	Cause of Death	Location Description
		Easting	Northing				
1	5	0518937	3807793	275	>4 YRS.	Unknown	In the open within the ZOI.
2	4	0519044	3807786	275	>4 YRS.	Possible gun shot and/or scavenged.	In the open within the ZOI, near a dead white bursage.
3	5	0518892	3807874	UNK	>4 YRS.	Unknown	In the open within the ZOI, near a tortoise shelter site.
4	3	0518101	3808140	120	2-4 YRS.	Unknown, evidence of scavenging.	In the open and under a dead Joshua tree within the project boundaries.
5	3	0515774	3807597	120	2-4 YRS.	Possible gun shot and/or scavenged.	Scattered over 20 feet in front of a burrow within the ZOI.

Other forms of desert tortoise sign were observed on and near the site. Sign included active and inactive burrows, fresh and old scat, and tracks. Tracks were generally found in sandy areas where fresh scat and active burrows were located.

In addition, two tortoises were observed on June 26, 2009 during a protocol level focused burrowing owl survey. These two individuals were observed foraging in the southwestern area, one within the Project site in the southwestern corner, one within the buffer survey area immediately off-site. These individuals were not photo-documented; therefore, it cannot be determined whether these individuals migrated from the southeastern area and were previously documented during the desert tortoise protocol level focused surveys. However, with this supplemental data, both the southeast and southwest area of the Project site are determined to support foraging adult tortoises. These two tortoises appeared healthy and did not show signs of an upper respiratory track disease or damage from predatory attacks.

Desert tortoises are solitary animals and travel long distances in order to mate during the breeding season. Tortoises and sign were found on the east and west sides of the Project site, which likely indicates that tortoises cross the site for mating during the breeding season. The two male tortoises and one female tortoise found on the southwestern area of the project site most likely utilize the burrows identified along the southern border, which allow for safe passage to the area of high density tortoise located to the southeast of the Project site. The Project site also serves as foraging grounds for desert tortoises, especially prevalent in the annual vegetation and the beavertail cacti (*Opuntia basilaris* var. *basilaris*), which showed signs of recent feedings in both the southeast and southwest corner of the Project site.

Burrow classification is broken down into five categories, according to USFWS desert tortoise survey methodology and sign documentation protocol (USFWS 1992). An active burrow with recent desert tortoise sign, such as scat, is categorized as Class 1. A Class 2 burrow is considered to be a definite desert tortoise burrow in good condition but has no evidence of recent use. Class 3 and 4 burrows are fairly deteriorated, but a Class 3 is still determined to be a desert tortoise burrow, while a Class 4 burrow is questionable. A Class 5 burrow is in somewhat good condition and could possibly be a desert tortoise burrow.

Desert tortoises utilize several different types of burrows, depending upon season and activity. These can be burrows that range from 2 to 10 meters deep or modified small mammal dens to shallow hollows less than one foot that are used temporarily during dispersal activities (Ernst et al. 1994). As desert tortoise will often utilize small mammal dens or hollows, it is not uncommon to classify these areas as potential desert tortoise burrows when in fact they initially belong to other wildlife in the area, such as kit fox and/or black-tailed jackrabbit.

A total of 107 burrows were observed on or near the Project site. Table 10 shows the breakdown of the number of burrows into separate class categories. Three Class 1-3 burrows and 31 Class 4-5 burrows were observed within the project site. Eight Class 1-3 burrows were observed within the 500-feet buffer and 27 Class 1-3 burrows were observed within the ZOI. Seventeen Class 4-5 burrows were observed within the 500-feet buffer and 21 Class 4-5 burrows were observed within the ZOI.

A total of 38 tortoise scats were observed within the buffer or within the ZOI. No desert tortoise scat was identified within the Project site. Five tortoise scats were observed within the 500-feet buffer and 33 scats were observed within the ZOI. Scat classification is also broken down into five categories, according to USFWS desert tortoise survey methodology and sign documentation protocol (USFWS 1992). A Class 1 scat is wet, not from rain or dew, or is freshly dried, and has an obvious odor. A Class 2 scat is dried with a glaze, has some odor, and is dark brown. Class 3 and 4 scats are dried with no glaze or odor, but a Class 3 scat is light brown showing little signs of bleaching, while Class 4 is light brown to pale yellow with loose material. A Class 5 scat is bleached or consists only of plant fiber. Table 10 shows the breakdown the number of scats into separate class categories.

Table 10 Desert Tortoise Sign Observed During Presence/Absence Surveys

	Burrows within Project Site	Burrows within Buffer Area	Burrows Within ZOI Area	Total Burrows Identified	Scat
Class 1	3	9	26	38	2
Class 2					16
Class 3					12
Class 4	30	21	18	69	0
Class 5					8
Total	**33**	**30**	**44**	**107**	**38**

3.4. WETLAND AND JURISDICTIONAL DELINEATION

3.4.1 Hydric Soils

The USDA Soil Conservation Service and USDA NRCS Web Soil Survey have not mapped soils within the Project site (USDA 2009). No Order III soil survey has been conducted on or in the vicinity of the proposed Project area. Data derived from the STATSGO geographic database has limitations. STATSGO (Order V) in particular was meant for regional planning purposes with large scale extrapolation from other sources. With very limited ground truthing, this data has limited application. The 1970 General Soil Map for the SW Desert Area, San Bernardino County, has mapped and described the soils within the project area as the Arizo-Daggett Association (excessively drained and somewhat excessively drained, very deep, gravelly soils). The following includes a description of soils identified during the reconnaissance level survey.

The Project site consists primarily of sandy loam soils on the flat terraces, loamy sandy soils, and loamy sand within the drainages and washes. The loamy sandy soils were more prevalent in the northern portion of the Project site and in the eastern area along the washes. Overall, these are well drained soils typical of sandy environments. A layer of caliche rock was exposed in some areas of the washes and dirt roads, and desert pavement type soils were observed in patches throughout the western area of the site.

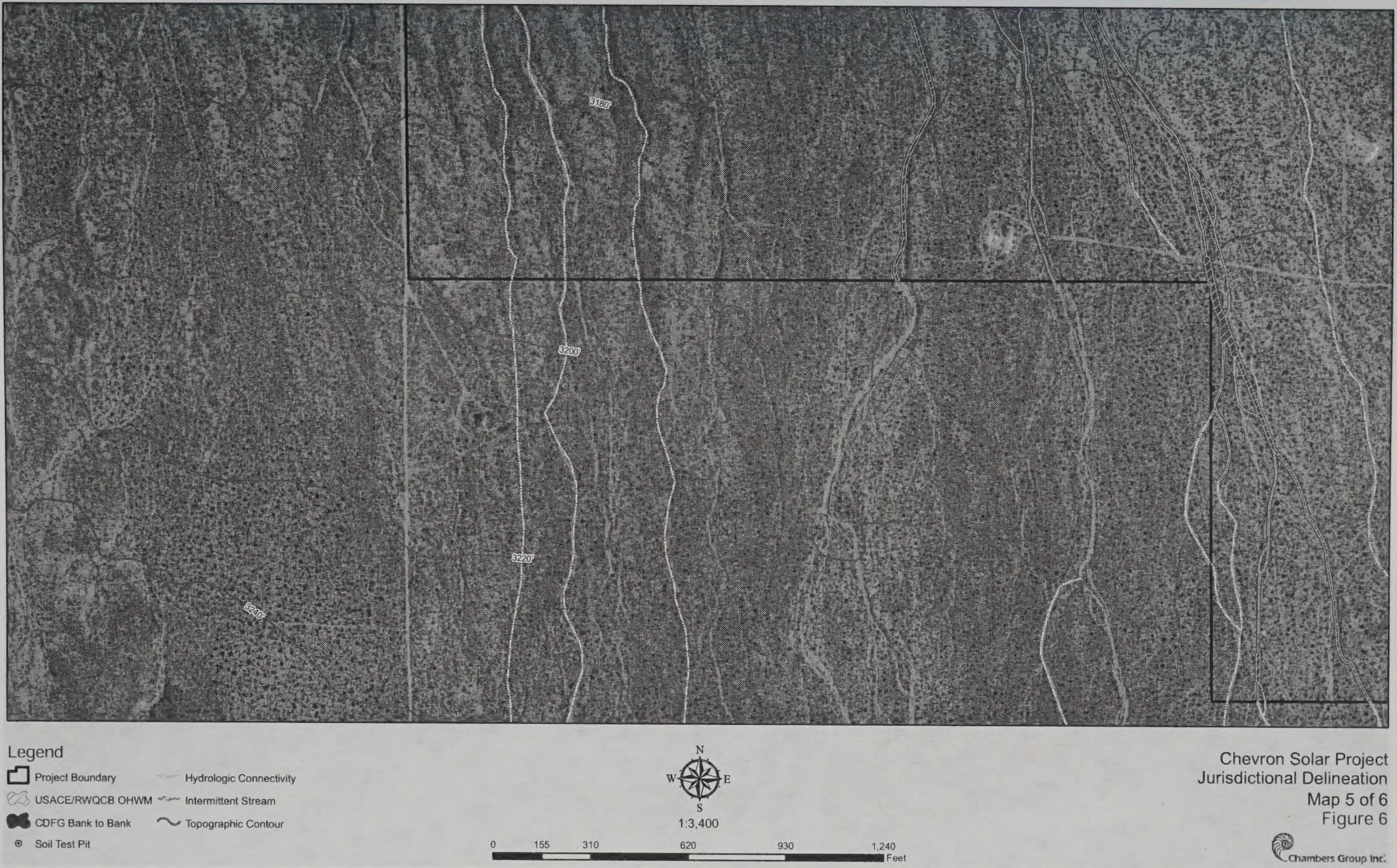
None of these soils are listed as hydric by the National Wetlands Inventory. In addition to these soils, soil pits confirmed the absence of hydric soils within the Project site.

3.4.2 Drainage Features and Connectivity

Many drainages were observed within the proposed Project footprint. For the purposes of this report, we have identified seven main drainages (Figure 6) within the Project site footprint to help organize the data in a more manageable manner. These seven major drainage systems are numbered 1 through 7 from west to east, flowing parallel in a northerly direction and terminating up at the dry Lucerne Lake area (Figure 6). Since the drainage systems branch off into braids that meander through the site and do not always display features that provide a visual connectivity to each other, these seven drainages are further grouped into Groups 1, 2, and 3. Reference soil pits and Rapanos forms are associated with Groups 1 through 3. These intermittent drainages are typical of desert habitat, with surface flow existing only directly after a heavy rain event. For example, on April 10, 2009, a rain event occurred on the Project site, and water collected in large pools along Hwy. 247 northwest of the Project site. No surface flow occurred within the Project site.

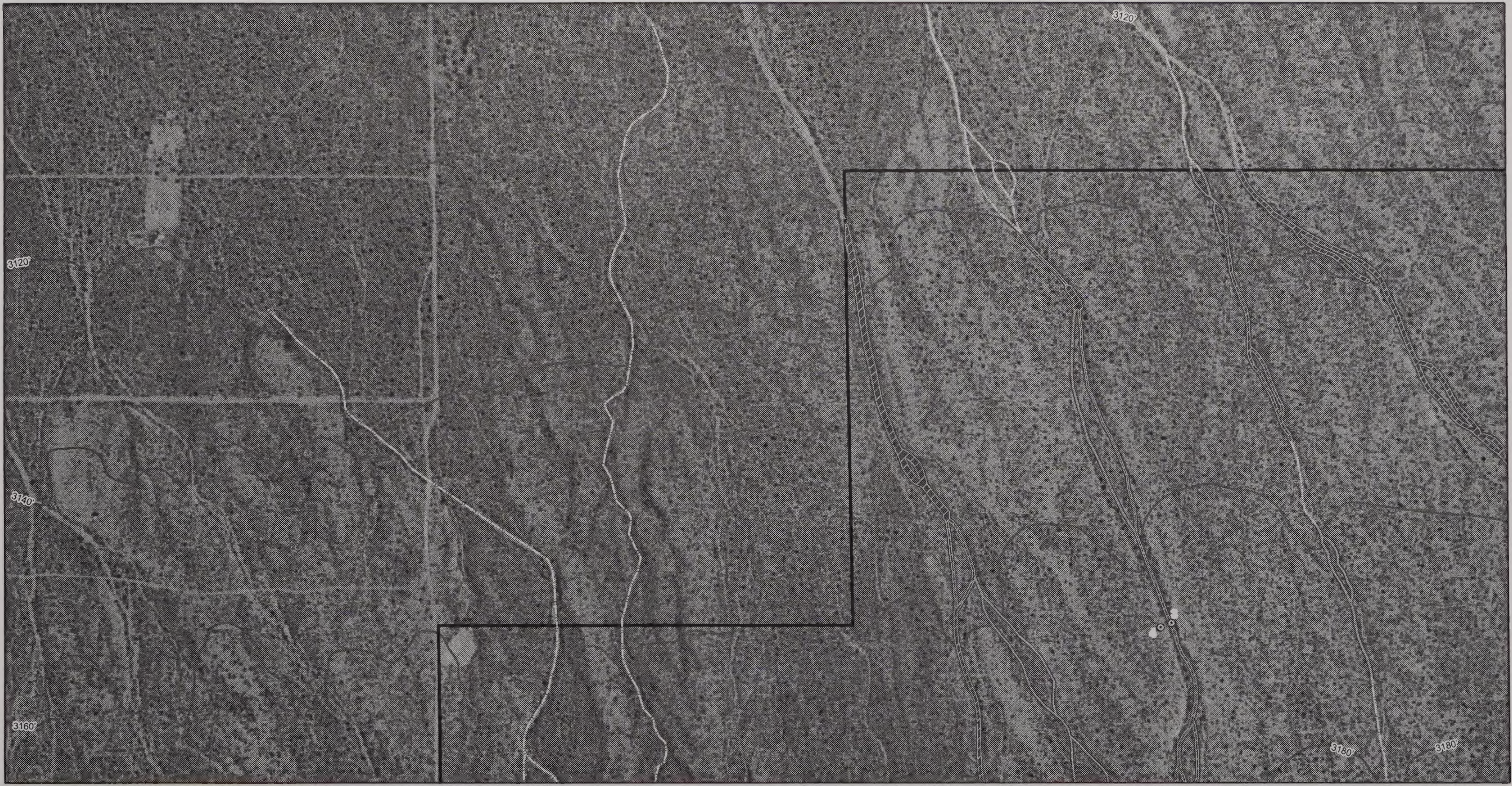
After an intense and steady rainfall event, the drainage systems on the Project site receive water from the San Bernardino Mountains located south and southeast of the Project site, as indicated by jurisdictional features such as OHWM and bank to bank characteristics. Flow from the San Bernardino Mountain Ranges continues through the Project site in a northerly direction, crossing Foothill Road and Old Woman Springs Road, into open desert, through scattered residences, and ultimately veers northwest through an unnamed drainage that concludes at Lucerne Lake. Lucerne Lake (a large dry lake throughout most of the year) is a non-Traditionally Navigable Water (non-TNW) located approximately 12 miles northwest of the Project site. The dry lake provides terrain for off-highway vehicles (OHV), and many tire tracks and tire impressions were observed. Many of the desert washes within the Project site also show evidence of OHV usage. Additionally, the site is disturbed by pedestrian traffic traversing the Project site using the dirt roads and/or drainage systems. Within the desert washes, very little vegetation was observed during the surveys, aside from scattered, emergent desert annual flowers. Vegetation along the banks is composed of desert scrub habitats including Creosote Bush and White-Bursage Series and disturbed habitats. No riparian scrub or wetland areas were found to be present in any of the drainage systems on the Project site.

Within the seven major drainage systems identified onsite, drainage features such a definable OHWM, and bank to bank features were not always apparent. Two issues arose when determining jurisdictional water acreages. One, surface hydrology appears to braid, meander, and subside within the sandy soils without a definable OHWM. These areas on the Project site appear outside of washes in areas where subsurface hydrologic connectivity or slight erosion features occur along the drainage. Calculations of bank to bank or OHWM widths were not possible in these areas and were not included in the delineations of jurisdictional waters. Two, within the washes themselves, the last rain major event produced many small braided OHWM within each wash. Instead of measuring each of the small OHWM (many showed an OHWM of less than one inch in height), the entire width of the wash was used in calculations for determining jurisdictional waters. However, it should be noted that many of the desert washes found on the site exhibit OHV use (tire tracks and impressions), which widens the drainages beyond that which would have been created naturally by rain events. In addition, there are two hydrologic connectivity features that are present within the southwest corner and near the western boundary of the site. These erosion areas do not exhibit well-defined bank to bank or OHMs, and therefore were not used in calculating jurisdictional waters.



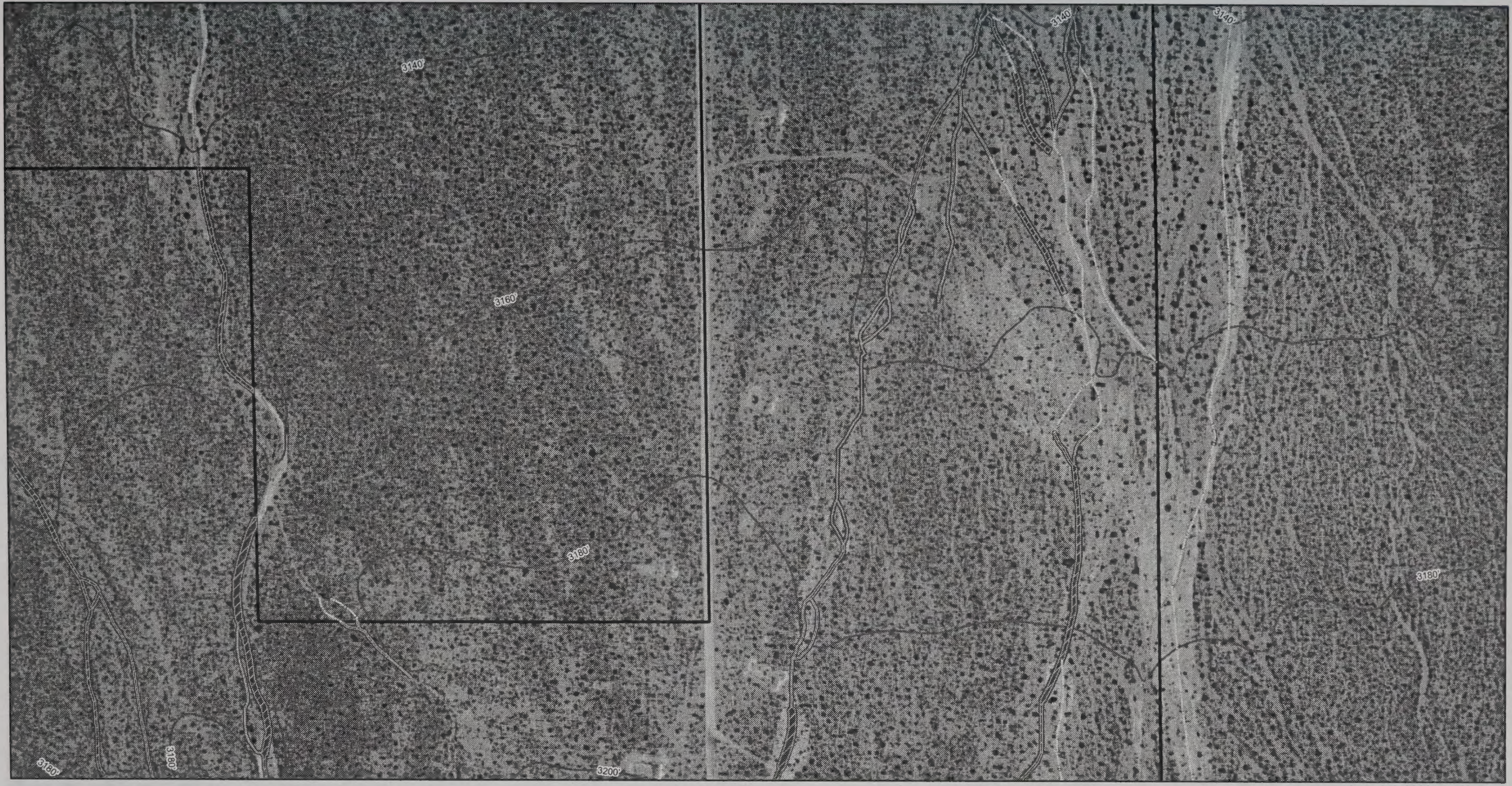
Chevron Solar Project
Jurisdictional Delineation
Map 5 of 6
Figure 6

Chambers Group Inc.



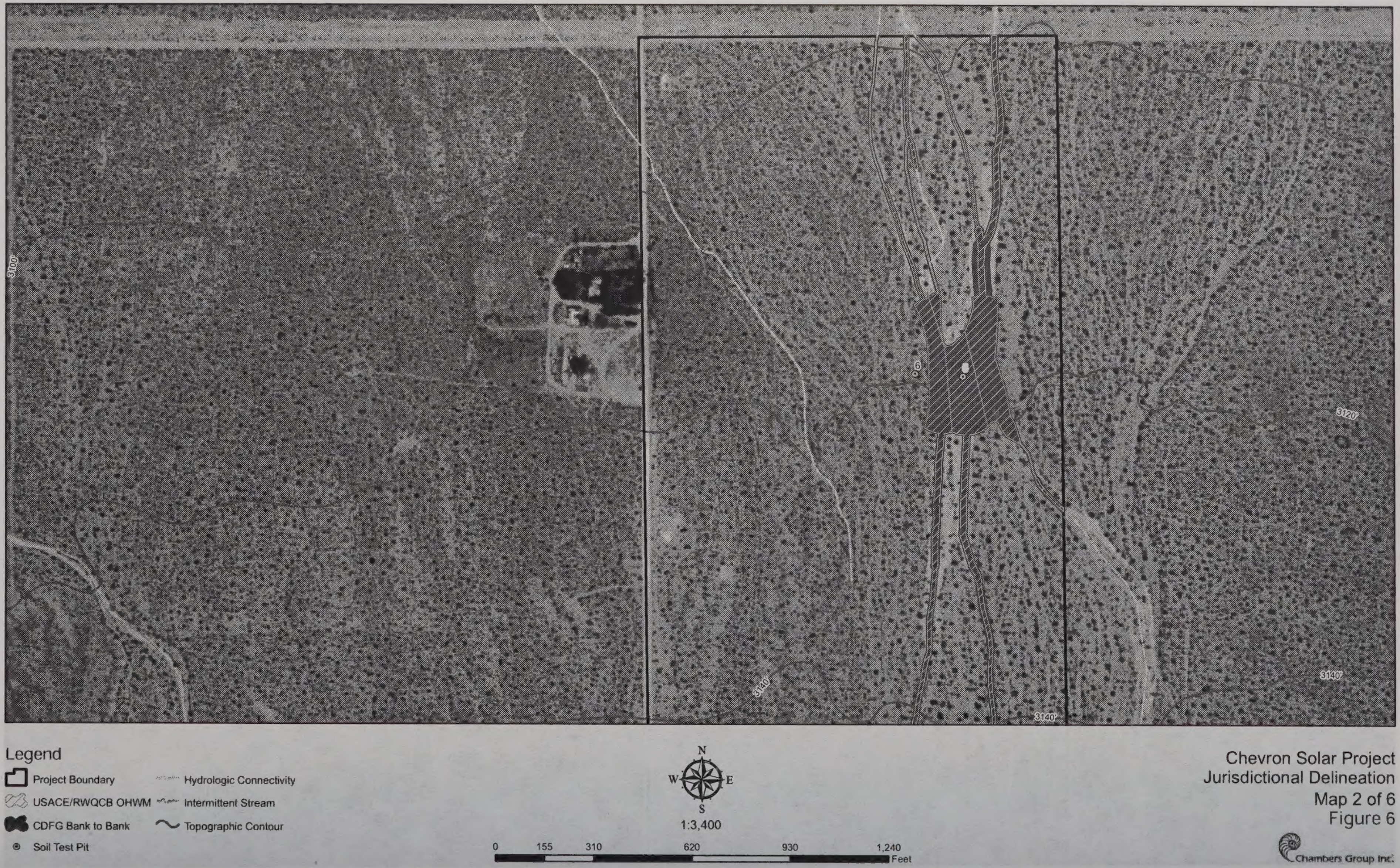
Chevron Solar Project
Jurisdictional Delineation
Map 4 of 6
Figure 6

Chambers Group Inc.



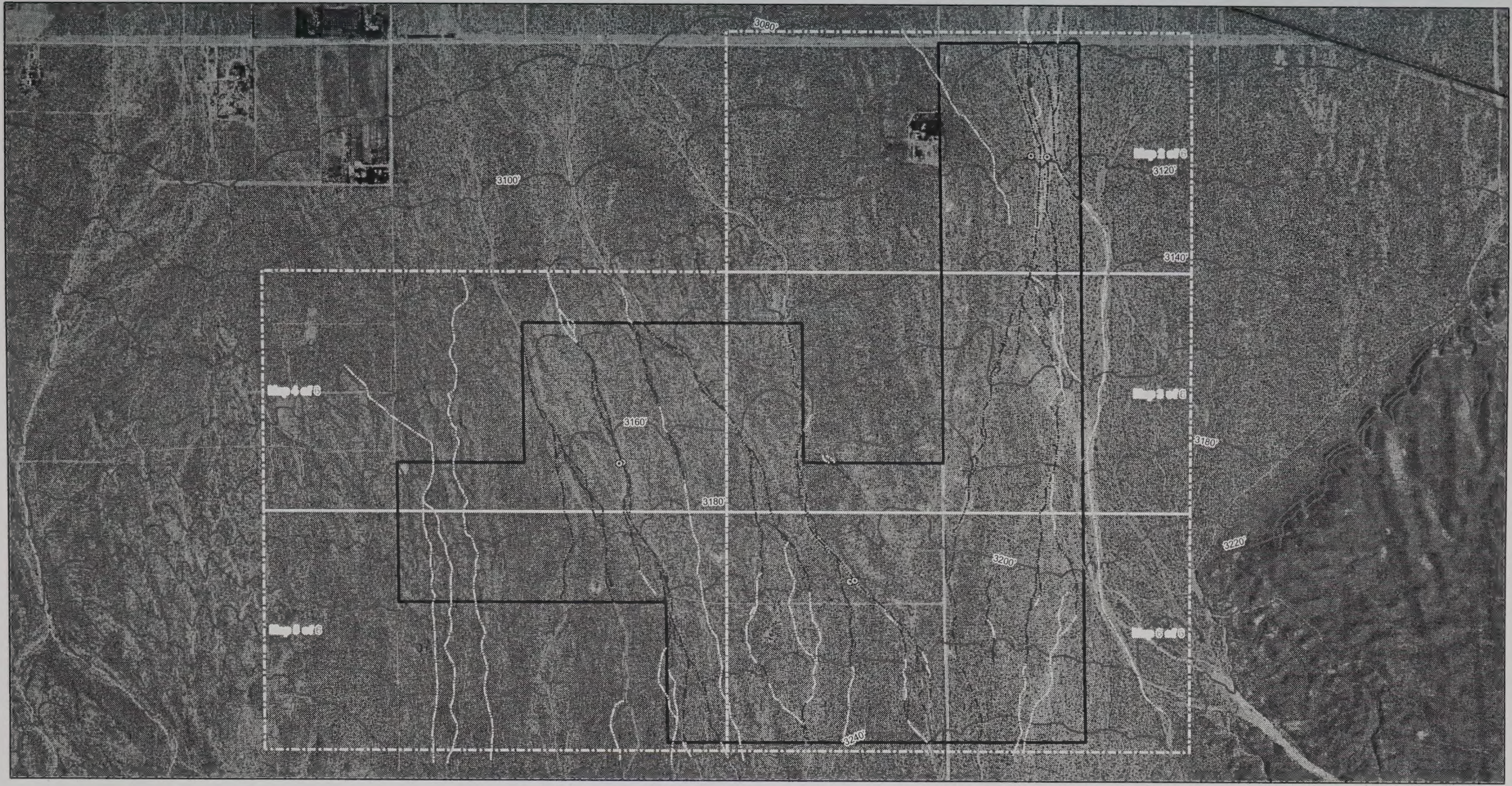
Chevron Solar Project
Jurisdictional Delineation
Map 3 of 6
Figure 6

Chambers Group Inc.



Chevron Solar Project
Jurisdictional Delineation
Map 2 of 6
Figure 6

Chambers Group Inc.



Legend

Project Boundary

Mapbook Index

⊙ Soil Test Pit

USACE/CDFG/RWQCB Jurisdictional Drainage

Hydrologic Connectivity

Intermittent Stream

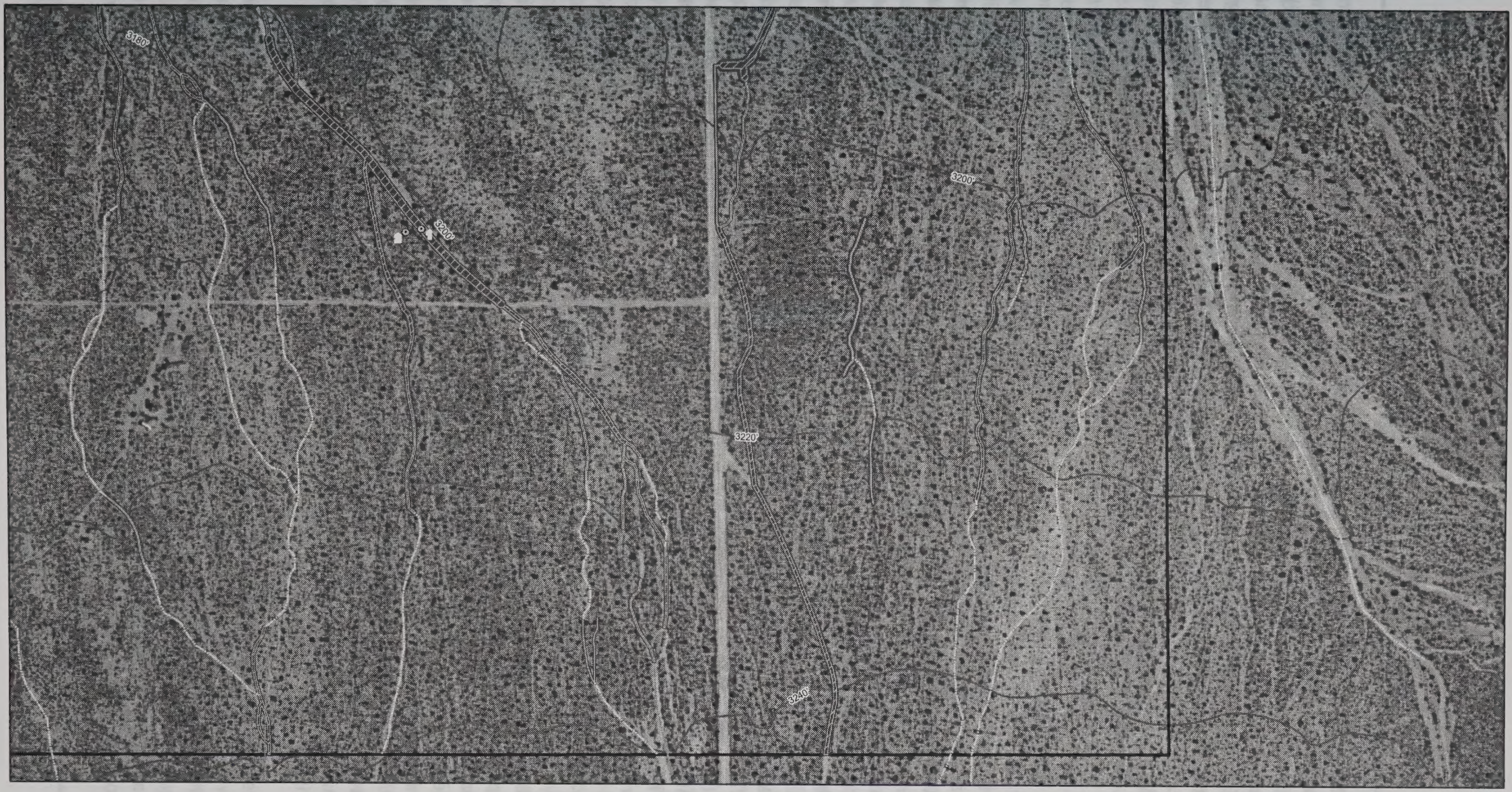
Topographic Contour

N
W E
S
1:11,000

0 485 970 1,940 2,910 3,880 Feet

Chevron Solar Project
Jurisdictional Delineation
Map 1 of 6
Figure 6

Chambers Group Inc.



Chevron Solar Project
Jurisdictional Delineation
Map 6 of 6
Figure 6

Chambers Group Inc.

Drainages 1 and 2 (Group 1) are located just east of Donaldson Road and southwest of Santa Fe Fire Road near the west side of the Project site. This drainage system flows through the western area of the Project site and does not intersect with Group 2 (Drainages 3 and 4) or Group 3 (Drainages 5, 6, and 7). This drainage system is located in a sandy wash and is the smallest of the drainage systems found on the Project site. Upland vegetation is sparsely scattered within this drainage system. Evidence of hydrology (non-riverine water marks and non-riverine sediment deposits) was present; however neither hydrophytic vegetation nor hydric soils were found to be present within this drainage system. Thus, this drainage system did not exhibit three-parameter wetlands.

Group 1

Group 1 drainage systems begin in the San Bernardino Mountains located south and southeast of the Project site. After an intense rain event, surface flow from the adjacent mountain range flows in a northerly and northwest direction through the Project site and flows subsurface just south of Foothill Road. Erosional features from this drainage system continue approximately 1.5 miles from Foothill Road northwest to Old Woman Springs Road through open desert and scattered residences. At this point flow veers in a slightly northwest direction and continues approximately 10 miles through open desert areas and subsurface through scattered residences. Group 1 ultimately concludes at the dry Lucerne Lake, approximately 12 miles northwest of the Project site. The drainage widths vary along its path, and at times the OHWM disappears through sandy substrate then reappears downstream to the north. Drainage 1 has an average bank to bank of 9.14 feet with an OHWM of 7.88 feet and a total length of 5,578.74 feet. Drainage 2 has an average bank to bank of 7.34 feet with an OHWM of 5.82 feet and a total length of 8,179.93 feet. Representative site photographs were taken to document site conditions during the survey (Appendix G). Due to the monotypic vegetation, lack of identifiable field markers, and a series of definable OHWM hidden by sandy soils, aerial photographs, USGS topographic maps, Google Earth images, NWI maps, GPS locations, and field observations were used to help assist in determining drainage characteristics and hydrologic connectivity.

Group 2

Drainages 3 and 4 (Group 2) are located east of Donaldson Road and west of Santa Fe Fire Road. This drainage system spans the center of the Project site from the south and southwest to north boundary of the Project site and does not intersect with Group 1 (Drainages 1 and 2) or Group 3 (Drainages 5, 6, and 7) within the Project site. These drainages are located just east of Group 1 and exhibit more defined OHWM and bank formations. Vegetation is sparsely scattered within the drainage system of washes, and evidence of hydrology (surface soil cracks, non-riverine water marks, and non-riverine sediment deposits) was present; however neither hydrophytic vegetation nor hydric soils were found to be present within this drainage system. Thus, this drainage system did not exhibit three-parameter wetland characteristics.

Group 2 drainages also begin in the San Bernardino Mountains located south and southeast of the Project site. After a severe rain event, flow from the adjacent mountain range flows north and northwest through the Project site, through this drainage system to Foothill Road. Flow from these drainages converges into one flow approximately one-half mile from the north boundary of the Project site at Foothill Road. From Foothill Road this drainage system continues to flow northwesterly to Old Woman Springs Road and crosses into the open desert landscape. From this location, subsurface flows continue approximately a half mile, where the flow connects to an unnamed drainage system north of the Project site (approximately 0.8 mile). At this point flow veers slightly northwest and continues approximately 10 miles through open desert areas and heads subsurface through scattered residences. Group 2 drainages ultimately conclude at the dry Lucerne Lake, approximately 12 miles northwest of the Project site. Drainage 3 has an average bank to bank of 9.02 feet with an OHWM of 7.08 feet and a total length of 7,978.99 feet. Drainage 4 has an average bank to bank of 11.13 feet with an OHWM of 8.95 feet and a total length of 7,049.88 feet. Representative site photographs were taken to document site conditions during the survey (Appendix G). Due to the monotypic vegetation, lack of identifiable field markers, and a series of definable OHWM hidden by sandy soils, aerial photographs, USGS topographic maps, Google Earth images, NWI maps, GPS locations, and field observations were used to assist in determining drainage characteristics and hydrologic connectivity.

Group 3

Drainages 5, 6, and 7 (Group 3) span the eastern area of the Project site, meandering in and out of the eastern boundary (Figure 9). These drainages are composed of sandy washes and were the widest and most extensive series of desert washes found within the site. Vegetation is also very sparse within this drainage system. Evidence of hydrology (non-riverine water marks and non-riverine sediment deposits) was present; however neither hydrophytic vegetation nor hydric soil were found to be present within this drainage system within the Project boundaries. Thus, this drainage system did not exhibit any wetlands or riparian scrub habitats. It should be noted that a dead sand bar willow (*Salix exigua*) was observed within Drainage 6 east of the Project site. This native tree is commonly found in desert riparian scrub communities, especially in sandy soils that receive a fairly constant source of water.

Group 3 (Drainages 5, 6, and 7) drainage systems also begin in the San Bernardino Mountains located southeast of the Project site. After a heavy constant rain event, flow from the adjacent mountain range flows north and northwest through the Project site to Foothill Road. Flow from this drainage system continues off the Project site in a northerly direction, crossing Foothill Road through open desert approximately one mile, then veers slightly northwest and continues approximately ten miles through open desert areas and subsurface through scattered residences. Group 3 drainage systems ultimately conclude at the dry Lucerne Lake, approximately 12 miles northwest of the Project site. Drainage 5 has an average bank to bank of 13.89 feet with an OHWM of 11.25 feet and a total length of 9,618.12 feet. Drainage 6 has an average bank to bank of 16.97 feet with an OHWM of 14.36 feet and a total length of 7,723.84 feet. Drainage 7 has average bank to bank of 35.84 feet with an OHWM of 30.80 feet and a total length of 2,290.98 feet. Representative site photographs were taken to document site conditions during the survey (Appendix G). Due to the monotypic vegetation, lack of identifiable field markers, and a series of definable OHWM hidden by sandy soils, aerial photographs, USGS topographic maps, Google Earth images, NWI maps, GPS locations, and field observations were used to help assist in determining drainage characteristics and hydrologic connectivity.

3.4.3 Wetlands

No jurisdictional wetlands were found to be present within any of the drainage systems on the Project site. Jurisdictional Wetlands are defined by three parameters:

- More than 50 percent of the dominant plant species at the site must be typical of wetlands (i.e., rated as facultative or wetter in the 1988 National List of Plant Species that Occur in Wetlands [Reed 1988]). These plants are known as "hydrophytic vegetation."
- Soils must exhibit physical and/or chemical characteristics indicative of permanent or periodic saturation (e.g., a gleyed color, or mottles with a matrix of low chroma indicating a relatively consistent fluctuation between aerobic and anaerobic conditions). Such soils, known as "hydric soils," have characteristics that indicate they are developed in conditions where soil oxygen is limited by the presence of saturated soil for long periods during the growing season.
- Hydrologic characteristics must indicate that the ground is saturated to within 12 inches of the surface for at least 5 percent of the growing season during a normal rainfall year. For most of low-lying Southern California, 5 percent of the growing season is equivalent to 18 days.

During the delineation survey, wetland hydrology indicators (non-riverine water marks, non-riverine sediment deposits, and surface soil cracks were present in three (Soil pits 1, 3, and 5) of the six soil pits on the Project site. However, no hydrophytic vegetation such as riparian scrub vegetation or hydric soils were present within the area where the soil pit data was recorded or within any of the erosional features found on the Project site. The lack of three wetland parameters (hydric soil *and* hydrophytic vegetation *and* wetland hydrology) indicates that no jurisdictional wetlands are present within the Project site. Therefore, no additional mitigation for wetlands is required for this Project.

3.4.4 USACE Jurisdiction

The drainage systems (Subject Drainages) flow in a northerly direction through the Project site from the San Bernardino Mountains to the south and ultimately connect and terminate at Lucerne Lake, a large dry lake used primarily for recreation by off-road enthusiasts and rocketry clubs. The lake does not support interstate commerce through fishing, boating, agricultural, or other uses.

The USACE asserts jurisdiction over TNW, wetlands adjacent to TNWs, non-navigable tributaries of TNWs that are relatively RPW where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months), and wetlands that directly abut such tributaries. TNWs and RPWs are not associated with this Project.

A significant nexus was not determined to exist for all Subject Drainages on the Project site based on the following facts:

- All Subject Drainages within the site are ephemeral and intermittent non-RPWs and exhibit surface flow only directly following a heavy and constant rain event. Although the Subject Drainages are hydrologically connected in approximately 12 miles to the dry Lucerne Lake (an isolated water body), Lucerne Lake is dry throughout the year and should not be considered a TNW; and
- Although the Subject Drainages and erosional features (hydrologic connectivity) have the capacity to carry pollutants, nutrients, and organic carbon downstream to the dry Lucerne Lake, this terminal area for the Subject Drainages is an isolated water body and should not be considered a TNW.

Therefore, no USACE jurisdiction was identified on the Project site. If, after consultation with USACE, Lucerne Lake is considered a TNW, USACE jurisdiction would include up to 48,420.49-linear feet (9.97 acres). However, based on the data from the delineation and the information at the time, no USACE jurisdictional waters exist within the Project site.

3.4.5 RWQCB Jurisdiction

The limits of RWQCB jurisdiction were defined by the OHWM within the Subject Drainages identified on the Project site. These drainages have the capacity to affect surface and subsurface water quality within California; and as a result of broad authority granted by the Porter-Cologne Act, the RWQCB has jurisdiction over the Subject Drainages.

Within the Subject Drainages identified onsite, drainage features such a definable OHWM and bank to bank features were not always visibly discernable. Surface hydrology at times appears to braid, meander, and subside within the sandy soils without a definable OHWM. These erosional areas on the Project site appear outside of washes in areas where subsurface hydrologic connectivity or slight erosion features occur along the drainage. Calculations of bank to bank or OHWM widths were not possible in these areas and were therefore not included in the delineations of RWQCB jurisdictional waters. In addition, within the washes themselves, the last rain major event produced many small braided OHWM within each wash. To determine the widths of the OHWM within the drainages, the widest area possible was recorded. However, it should be noted that many of the desert washes found on the site exhibit OHV use which widens the drainages beyond what would have been created naturally by rain events. Additionally, there are two hydrologic connectivity features that are present within the southwest corner and near the western boundary of the site. These erosion areas do not exhibit well-defined bank to bank or ordinary high water marks, and therefore were not used in calculating RWQCB jurisdictional waters.

Total RWQCB jurisdiction would include up to 48,420.49-linear feet (9.97 acres). The Design Plan for this project has not been approved at this time. Permanent impacts and temporary impacts cannot be determined with accuracy. Therefore, the acreages listed above for RWQCB jurisdiction are based on a worst-case scenario in which all of the drainages on the entire project site will be impacted. After a Plan of Design has been approved and accepted, the actual impacts, both temporary and permanent will be re-calculated and this report will be revised appropriately.

3.4.6 CDFG Jurisdiction

The limits of CDFG jurisdiction are normally larger than the other regulatory agencies because CDFG jurisdiction extends laterally from bank to bank of the stream rather than from the OHWM. Though the Subject Drainages were considered to be of poor or low quality to wildlife, primarily due to OHV usage and pedestrian traffic observed within the drainages at the time of the delineation, no aquatic wildlife or aquatic plant species were observed. The Subject Drainages within the Project site do exhibit defined bank to bank characteristics including 1 to 3-foot shelves on average, and exhibit drainage features including OHWM. Therefore, CDFG jurisdiction applies to the bed and bank formations of the seven Subject Drainages identified onsite.

Total CDFG jurisdiction includes up to 48,420.49-linear feet (12.32 acres). Permanent impacts and temporary impacts cannot be determined with accuracy. Therefore, the acreages listed above for CDFG jurisdiction are based on a worst-case scenario in which all of the drainages on the entire project site will be impacted. After a Plan of Design has been approved and accepted, the actual impacts, both temporary and permanent will be re-calculated and this report will be revised appropriately.

Table 11 contains jurisdictional acreage breakdowns for the USACE, RWQCB, and the CDFG.

Table 11 Jurisdictional Acreage Matrix

Agency	Wetland	Non-Wetland	Total Jurisdiction	Impacts to Wetland	Impacts to Non-Wetlands	Total Permanent Impacts
USACE	0.00	0.00	0.00	0.00	0.00	0.00
RWQCB	0.00	9.97	9.97	0.00	9.97	9.97
CDFG	0.00	12.32	12.32	0.00	12.32	12.32

- Total USACE jurisdictional acreage is equal to zero. The USACE asserts jurisdiction over TNW, wetlands adjacent to TNWs, non-navigable tributaries of TNWs that are relatively permanent (RPW) where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months), and wetlands that directly abut such tributaries. TNWs and RPWs do not exist for this Project. Impacts to USACE jurisdictional waters will not result from Project activities.

- Total RWQCB jurisdictional acreage, as defined by the OHWMs, amounts to 9.97 acres (48,420.49 linear feet). Impacts to RWQCB jurisdictional waters will result from Project activities.

- Total CDFG acreage, as defined by the bank to bank measurements, amounts to 12.84 acres (48,420.49 linear feet). Impacts to CDFG jurisdictional water will result from Project activities.

SECTION 4.0 – CONCLUSIONS AND RECOMMENDATIONS

4.1. SPECIAL STATUS PLANT SPECIES

Because all special status plant species could not be confirmed absent from the Project site, Chambers Group recommends that a secondary protocol-level focused plant survey be conducted during March or April of 2010 (dependent upon rainfall) for the white pygmy-poppy and the Little San Bernardino Mountains linanthus.

4.2. SUCCULENT SPECIES INVENTORY

Coordination with BLM will be required to determine the extent to which succulent species identified within the Project boundary (Table 4) will require mitigation or translocation. A survey will be necessary to document the condition and map the location of each of these succulent species onsite. Each individual succulent to be salvaged will be assigned an ID number and will be permanently tagged. GPS coordinates will be taken at all removal locations and recorded for an accurate inventory. Typically, only Joshua trees between 2 and 10 feet in height are suitable for relocation. Upon completion of the succulent species inventory, a translocation plan will be prepared for the Project site.

4.3. MINIMIZATION OF NON-NATIVE INVASIVE WEED SPREAD

To prevent contamination of weed species into new habitats, Chambers Group recommends that all vehicles and heavy equipment used onsite be cleaned to remove any seeds that may have attached to construction vehicles. The vehicles must be washed with water or blown down using compressed air prior to entering the construction site. The wash/blow down will concentrate on tracks, feet, or tires and on the undercarriage, with special emphasis on axles, frame, cross members, motor mounts, and on underneath steps, running boards, and front bumper/brush guard assemblies. Vehicle cabs will be swept out, and the refuse will be disposed of in waste receptacles. The Contractor, with oversight from a biologist, will ensure that vehicles and equipment are free of soil and debris capable of transporting non-native invasive weed seeds, roots, or rhizomes before the vehicles and equipment are allowed use of access roads. Seeds and plant parts will be collected, bagged, and deposited in dumpsters destined for local landfills, when practical.

4.4. SPECIAL STATUS WILDLIFE

Two special status wildlife species (i.e., desert tortoise and burrowing owl) were either present on the Project site during surveys conducted by Chambers Group biologists in March and April 2009, or have a moderate to high potential to occur on the Project site due to habitat onsite and/or historic occurrences. Although the Mohave ground squirrel has a low potential to occur on the project site, coordination with CDFG is recommended for trapping efforts to confirm presence/absence and/or mitigation for this species.

4.4.1 Desert Tortoise

Desert tortoise sign was found throughout the site and the surrounding areas. A majority of the sign was observed in the southern portion of the site and particularly in the southeast corner. More sign and tortoises are present just outside the Project boundaries, especially on the southern end due to the hill slopes on the south side of the San Bernardino Mountains and the washes they create. Tortoises were identified on site during the surveys and may require relocation off-site in an USFWS and BLM approved area, within 1,000 feet of the project site, within its home range. A plan to identify the relocation area, season and timing of movement of the tortoise, and monitoring may be required. The six other tortoises identified off site within the buffer or ZOI survey area during the desert tortoise surveys could be monitored and avoided during project construction. Coordination with USFWS, BLM, and CDFG is recommended regarding this species.

The proposed Project will effect but not likely to adversely affect the desert tortoise. The conservation and monitoring measures outlined in this report and in the USFWS Biological Opinion shall reduce the direct and indirect impacts to the desert tortoise and its habitat. Chambers Group proposes that authorized monitors be present onsite throughout all of CES' construction activities, and these monitors shall be responsible for the safety of all wildlife species encountered in the Project areas.

4.4.2 Burrowing Owl

Burrowing owl sign was detected during the protocol level focused surveys. Based on a subsequent survey conducted in June, no new sign or burrowing owls were observed. Due to the presence of habitat, and the proximity of occurrences in the immediate area, CDFG may require additional surveys prior to construction activities. Coordination with CDFG regarding this species is recommended.

4.5. MITIGATION AND MONITORING

4.5.1 Desert Tortoise

Due to the presence of desert tortoises on the site and within close proximity of the site, mitigation and monitoring shall be required. CES would need to implement standard desert tortoise avoidance procedures during construction to minimize direct and indirect impacts. Also, consultation under ESA and CESA would be required. The following discussion outlines typical desert tortoise avoidance and minimization measures; however these measures may be modified during the consultation process.

- All construction personnel shall attend an agency approved Personnel Environmental Awareness Program for desert tortoise.

- Authorized Biologists (USFWS and BLM approved) would conduct preconstruction clearance surveys for desert tortoises within 48 hours of the start of ground disturbing construction activity. At a minimum, the clearance surveys would cover the entire project ROW and the area out to a 100-foot zone of influence (ZOI) around the BLM ROW project boundary, including all areas that might be subject to disturbance such as parking areas and lay down areas. Burrows that are found would be checked for desert tortoises; when desert tortoises are found, the burrows would be flagged so that equipment operators and drivers could clearly see the flagging and avoid the burrows. Unoccupied burrows would be flagged also, but in a manner that contrasts with occupied burrows. Prior to construction of the installation of exclusionary fencing, an Authorized Biologist would recheck the burrows and remove any desert tortoises that may be endangered by the construction activity following USFWS protocol. Construction within the ROW would not commence until the installation of the exclusionary fencing was complete, and all tortoises were relocated off site.

- A desert tortoise exclusion fence shall be established around the entire Project site following standard specifications. This fence shall be inspected at least monthly and maintained over the life of the Project. Special habitat features, such as burrows, identified by the authorized biologist shall be avoided. Staging areas shall be prohibited in sensitive biological areas such as within 100 feet of drainages, or known burrow locations. Staging areas shall be reviewed and approved by the Project biologist. If necessary, changes in location shall be incorporated into the construction contract. Within the authorized surface use areas, disturbances, such as temporary staging areas or parking areas for equipment, shall be confined to the smallest practical location, considering topography, placement of facilities, locations of burrows, public health, and safety. Such areas shall be marked to minimize surface disturbance associated with vehicle straying.

- All construction areas would be inspected for desert tortoises at least three times daily (start of shift, mid-day, and end of shift) until fence installation and relocation of any tortoises on site has been completed. Any hole or trench would be inspected for desert tortoises prior to its being closed. Trenches left open overnight or over a weekend would be covered with metal plates to prevent desert tortoises from entering.

- A construction monitoring team of at least one Authorized Biologist and one desert tortoise monitor would be assigned to each fence installation area. Since fence installation may have more than one construction crew working simultaneously, a desert tortoise monitor would be present with each construction crew to ensure compliance with desert tortoise protection measures. The assigned desert tortoise monitor would sweep in front of the each construction crew's equipment during its operation, and would have the authority to halt project activity as needed should danger to a desert tortoise arise. Project activity would be allowed to continue to proceed only after hazard to the desert tortoise has been removed, the desert tortoise is no longer at risk, or the desert tortoise has been moved from harm's way by the segment Authorized Biologist.

- If a Desert Tortoise Requires Relocation Offsite, the following procedure would be used: The Authorized Biologist would only handle each desert tortoise when necessary. New latex gloves would be used when handling each desert tortoise to avoid transfers of infectious diseases between animals. Desert tortoises would be moved the minimum distance possible within appropriate BLM and USFWS approved habitat offsite on public lands within its home range to ensure their safety; no adult desert tortoises would be moved in excess of 1,000 feet, or a juvenile or hatchling more than 300 feet. The Authorized Biologist would follow the protocols outlined in Desert Tortoise Council (1999). Desert tortoises found above ground that must be moved would be moved in the direction in which it was moving, and placed under the shade of a shrub.

- All desert tortoise burrows/pellets within the proposed Project areas and zone of influence (as defined in USFWS survey protocol) shall be marked so that the equipment operators can identify and avoid such shelter sites. Flagging of these locations shall be performed prior to initiation of the proposed Project.

- Heavy equipment operators shall be accompanied by a qualified biologist when working in desert tortoise habitat during construction activities. The biological monitor shall walk in front of the equipment during its operation and has the responsibility and authority to halt all Project activity should danger to a desert tortoise arise. Work shall proceed only after hazards to the desert tortoise are removed, the desert tortoise is no longer at risk, or the desert tortoise has been moved from harm's way by an authorized biologist. A desert tortoise could be found above ground during both their active and inactive seasons; therefore, a construction monitor shall be present to ensure compliance with construction best management practices (BMPs) and shall be present in the event a tortoise is found within the Project area.

- Vehicle speeds would not exceed 20 miles per hour during construction activities. The **speed limit** would be maintained within the project ROW and on unpaved access roads while driving in desert tortoise habitat.

- All leaks, spills, or releases of fuel or other hazardous materials off Project ROW would be reported immediately to BLM. All such material that leaks, spills, or is otherwise released into habitat of the desert tortoise along existing access roads or within the project ROW would be removed immediately. The Authorized Biologist would ensure that all appropriate measures, including those proposed by CES and the BO terms and conditions, are implemented during the removal of the hazardous materials.

- Water leaks will be prevented from pooling within the project area and access roads. Water tanks and/or water trucks will be inspected regularly for leaks and documented on a regular basis. If leaks are identified, corrective actions would be conducted immediately within the exclusionary fence.

- Pets and firearms shall be prohibited.

- **Trash and food items** would be disposed of promptly in predator-proof containers with re-sealable lids. Trash containers would be removed at the end of each work day.

- Off-road travel and temporary storage areas outside of the staging areas or construction zones shall be prohibited.

- BMPs shall be incorporated to prevent the soil from becoming airborne or being washed away as sediment.

- Fueling of equipment shall not occur adjacent to or in drainages.

- Stockpile areas shall be reviewed and approved by the Project biologist. If necessary, changes in location shall be incorporated into the construction contract.

- Any trenches temporarily created shall be sloped at the end of each workday to allow wildlife to escape. All trenches shall be inspected for desert tortoise occupancy before work begins the following day.

- The names of proposed authorized and qualified biologists shall be submitted by CES's environmental consultant (Chambers Group) to the BLM at least 30 days prior to the onset of construction activities. No activities shall begin until an authorized biologist is approved under the auspices of the Section 7 consultation. Project biologists, as authorized by both the USFWS and BLM, shall oversee all aspects of construction monitoring that pertain to biological resources protection and shall ensure compliance with avoidance and minimization measures. Typically, BLM requires the project proponent establish tortoise-proof enclosures for all work areas, and ultimately the Project shall need to be fenced with desert tortoise exclusion fencing for the life of the Project. The biologists shall monitor all construction activities, including the installation of desert tortoise exclusionary fencing. The biologists shall provide all maintenance personnel with an orientation and information pamphlet that discusses the biology of desert tortoise, potential hazards to tortoises from construction activities, how each construction worker can help to prevent direct and indirect harm to tortoises, the legal status of the tortoise, local adoption as alternative to poaching, and how to handle an injured tortoise.

- Encounters with desert tortoise shall be reported to an authorized or qualified biologist.

- Desert tortoises shall be handled only by the authorized biologists when necessary and in accordance with the "Guidelines for Handling Desert Tortoises During Construction Projects" (Desert Tortoise Council 1994, revised 1999). Workers shall inspect for desert tortoises resting in the shade under vehicles and equipment prior to moving. If a desert tortoise is present, the worker(s) shall allow the tortoise to move on its own accord, or notify the Authorized biologists to move the tortoise only when necessary. If this is not possible, the worker(s) shall wait for the desert tortoise to move out from under the vehicle before moving the vehicle, or the authorized biologist shall carefully move the desert tortoise using the previously mentioned protocol methods.

- The authorized biologist shall remove any desert tortoise that is threatened by Project activities to a nearby location in accordance with protocol (Desert Tortoise Council 1994, revised 1999). The proponent shall submit a post-Project report identifying all activities affecting the desert tortoise to USFWS Ventura Office and to the BLM Barstow Field Office.

- A record shall be maintained of all desert tortoises handled by the biologists. This information shall include for each desert tortoise:

  A. The location(s) (narrative and maps) and dates of observations;

  B. General condition and health, including injuries and state of healing and whether animals voided their bladders;

  C. Location moved to and from;

  D. Diagnostic markings (identification numbers or marked lateral scutes); and

  E. Photographs of each handled desert tortoise.

- Upon locating a dead or injured desert tortoise resulting from Project activities, the BLM shall notify the USFWS by telephone within three days of the finding. Written notification shall be made within five days of the finding. The information provided shall include the date and time of the finding or incident (if known), location of the carcass or injured animal, a photograph, cause of death, if known, and any other pertinent information.

- Any injured desert tortoise discovered within the Project area shall be transported by the authorized biologist to the nearest qualified veterinarian for treatment. Costs incurred for treatment shall be paid for by CES. If the animal recovers, the Ventura office of the USFWS shall be contacted for final disposition of the animal.
- If a death should occur, the BLM shall place the remains of intact desert tortoise carcasses with educational or research institutions holding the appropriate State and Federal permits. If the remains are in poor condition, the information noted above shall be obtained and the carcass left in place. If left in place, the authorized biologist or monitor shall mark the carcass to ensure that it is not reported again.

Mitigation as defined in the BLM's West Mojave Plan for loss of tortoise habitat shall be assessed at a 1:1 ratio ($770 per acre plus a 15 percent acquisition fee plus a 17.1 percent indirect cost fee). This project will likely require a relocation plan approved by the BLM, USFWS and CDFG. The plan would identify relocation and translocation areas, season and timing of movement of tortoises and monitoring. Coordination with USFWS is recommended.

4.5.2 Burrowing Owl

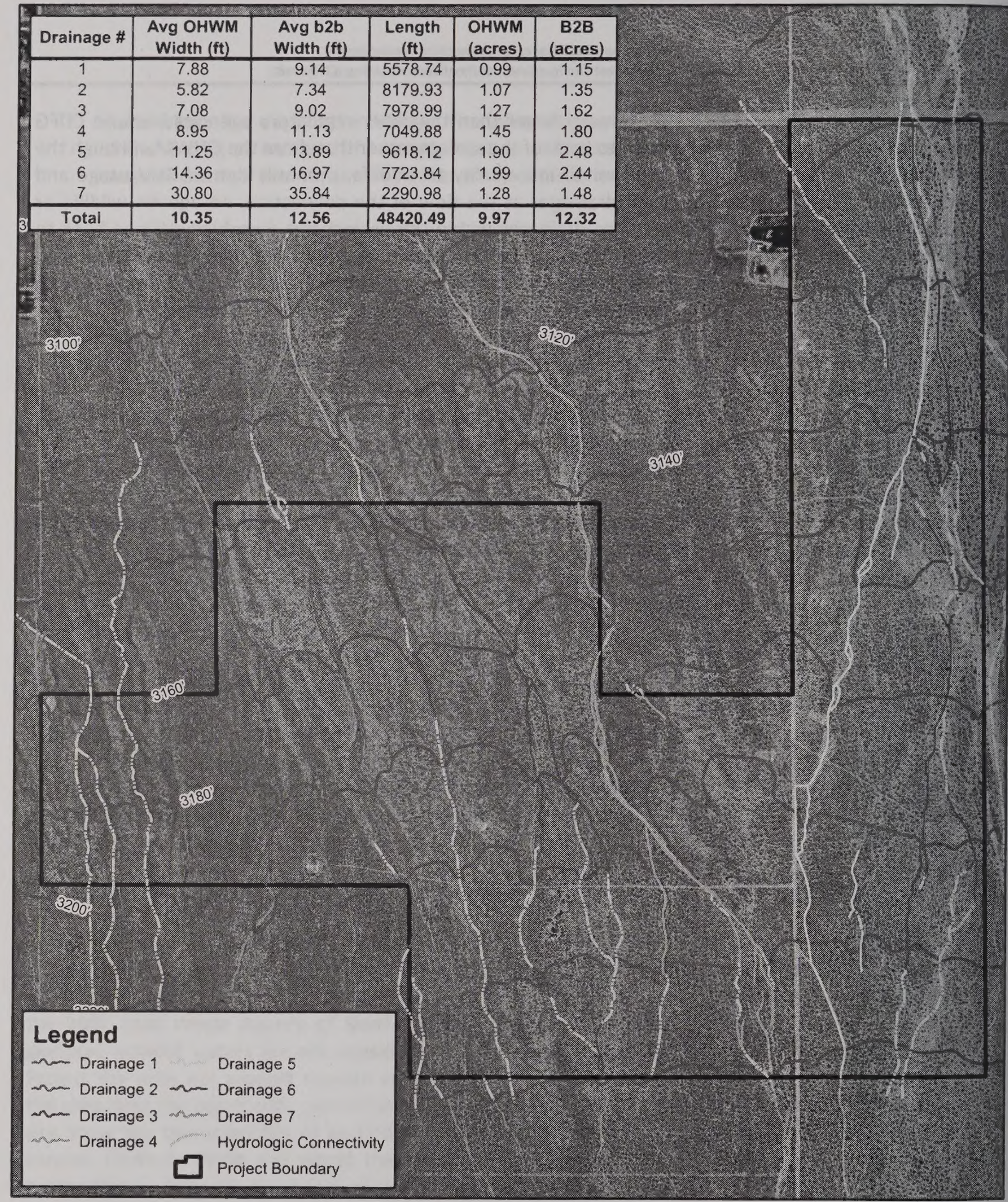
Burrowing owls were not present on the site during the initial surveys; however, burrowing owl sign (i.e., burrows, pellets and white wash) were observed onsite. Although no burrowing owls or new burrowing owl sign was identified during the reconnaissance level and protocol level focused surveys, due to the occurrences in the immediate area, coordination with CDFG regarding this species is recommended for additional surveys and/or mitigation.

4.6. WETLAND AND JURISDICTIONAL DELINEATION

Based on the Formal Jurisdictional Delineation Surveys conducted in April 2009 by Chambers Group, the Chevron Solar Project (Project) site does not contain any wetlands or waters of the United States subject to the regulatory jurisdiction of the USACE pursuant to Section 404 of the Clean Water Act. Pursuant to the 2001 *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers* (SWANCC) decision, isolated waters are not considered subject to the regulatory jurisdiction of the USACE. The Project site does not support riparian vegetation in the form of Disturbed Riparian Scrub habitat, and the area lacks the hydric soils parameters required for definition as USACE Wetlands. The drainages on site show the characteristics of an Ordinary High Water Mark (OHWM); however, the site does not contain TNWs or RPWs and would therefore not be considered USACE jurisdictional Waters of the United States. Although these features would not be subject to the regulatory jurisdiction of the USACE, they would likely be subject to the regulatory jurisdiction of the Regional Water Quality Control Board (RWQCB) pursuant to recent directives of the Governor of California and additional State Water Quality Control Board (SWQCB) orders.

The limits of CDFG jurisdiction are normally larger than the other regulatory agencies because CDFG jurisdiction extends laterally from bank to bank of the stream rather than from the OHWM. Though the drainages were considered to be of poor or low quality to wildlife, primarily due to OHV usage and pedestrian traffic observed within the drainages at the time of the delineation, no aquatic wildlife or aquatic plant species were observed. The drainages within the project site do exhibit defined bank to bank characteristics including 1 to 3-foot shelves on average, and exhibit drainage features including OHWM. Therefore, the Project site would be subject to the jurisdiction of the CDFG pursuant to Section 1602 of the California Fish and Game Code.

Drainage systems on the Project site will be temporarily and permanently impacted by the proposed solar project. No Section 404 Permit will be required from the USACE per the Clean Water Act (CWA). A Section 401 certification and a Section 402 NPDES Permit with the associated Storm Water Pollution Prevention Plan will be required from the RWQCB per the CWA, as impacts to RWQCB jurisdictional waters will result from Project activities. In addition to the 401 and 402 permits, a Streambed Alteration Agreement (SAA) will be required from the CDFG per Fish and Game Code 1602. Mitigation is recommended in association with the Project, as bank to bank impacts will occur, and impacts to CDFG and RWQCB jurisdictional waters will result from Project activities.



Drainage #	Avg OHWM Width (ft)	Avg b2b Width (ft)	Length (ft)	OHWM (acres)	B2B (acres)
1	7.88	9.14	5578.74	0.99	1.15
2	5.82	7.34	8179.93	1.07	1.35
3	7.08	9.02	7978.99	1.27	1.62
4	8.95	11.13	7049.88	1.45	1.80
5	11.25	13.89	9618.12	1.90	2.48
6	14.36	16.97	7723.84	1.99	2.44
7	30.80	35.84	2290.98	1.28	1.48
Total	**10.35**	**12.56**	**48420.49**	**9.97**	**12.32**

Chambers Group Inc.

Chevron Solar Project
Jurisdictional Delineation Drainages
Figure 7

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APPENDIX A – PLANT SPECIES OBSERVED ONSITE

Appendix A
Plant Species Observed During the Habitat Assessment on the Chevron Solar Project (Lucerne Valley) Site

Scientific Name	Common Name
GYMNOSPERMS	
EPHEDRACEAE	**EPHEDRA FAMILY**
Ephedra nevadensis	Nevada ephedra
ANGIOSPERMS (DICOTYLEDONS)	
ASTERACEAE	**SUNFLOWER FAMILY**
Ambrosia dumosa	burro bush
Chaenactis sp.	pincushion
Hymenoclea salsola	burrobrush
Lepidospartum squamatum	scale-broom
Machaeranthera sp.	tansyaster
BORAGINACEAE	**BORAGE FAMILY**
Amsinckia tesselata	devil's lettuce
Cryptantha pterocarya	wingnut cryptantha
BRASSICACEAE	**MUSTARD FAMILY**
Descurainia pinnata ssp. *glabra*	blunt tansymustard
Lepidium fremontii var. *fremontii*	desert peppergrass
*Sisymbrium irio**	London rocket
CACTACEAE	**CACTUS FAMILY**
Opuntia basilaris var. *basilaris*	beavertail cactus
Opuntia echinocarpa	golden cholla
Opuntia ramosissima	pencil cholla
CAPPARACEAE	**CAPER FAMILY**
Isomeris arborea	bladderpod
CHENOPODIACEAE	**GOOSEFOOT FAMILY**
Atriplex canescens	four-wing saltbush
Krascheninnikovia lanata	winter fat
FABACEAE	**LEGUME FAMILY**
Astragalus sp.	astragalus
GERANIACEAE	**GERANIUM FAMILY**
*Erodium cicutarium**	red-stemmed filaree
HYDROPHYLLACEAE	**WATERLEAF FAMILY**
Phacelia sp.	phacelia
KRAMERIACEAE	**RHATANY FAMILY**
Krameria erecta	littleleaf rhatany
LOASACEAE	**LOASA FAMILY**
Mentzelia obscura	Pacific blazingstar
Petalonyx thurberi	sandpaper plant
MALVACEAE	**MALLOW FAMILY**
Sphaeralcea ambigua	desert mallow
NYCTAGINACEAE	**FOUR O'CLOCK FAMILY**
Mirabilis sp.	wishbone bush
ONAGRACEAE	**EVENING PRIMROSE FAMILY**
Camissonia sp.	camissonia

Appendix A (Continued)
Plant Species Observed During the Habitat Assessment on the Chevron Solar Project (Lucerne Valley) Site

Scientific Name	Common Name
POLEMONIACEAE	**PHLOX FAMILY**
Eriastrum sapphirinum	sapphire eriastrum
POLYGONACEAE	**BUCKWHEAT FAMILY**
Eriogonum deflexum	flat-topped buckwheat
Eriogonum fasciculatum	California buckwheat
RANUNCULACEAE	**BUTTERCUP FAMILY**
Delphinium sp.	larkspur
ROSACEAE	**ROSE FAMILY**
Coleogyne ramosissima	blackbush
SCROPHULARIACEAE	**FIGWORT FAMILY**
Castilleja sp.	Indian paintbrush
SOLANACEAE	**NIGHTSHADE FAMILY**
Lycium sp.	box-thorn
ZYGOPHYLLACEAE	**CALTROP FAMILY**
Larrea tridentata	creosote bush
ANGIOSPERMS (MONOCOTYLEDONS)	
AGAVACEAE	**AGAVE FAMILY**
Yucca brevifolia	Joshua tree
POACEAE	**GRASS FAMILY**
Pleuraphis rigida	big galleta
*Schismus barbatus**	Mediterranean schismus
*** Non-native species.**	

Appendix A
Plant Species Observed During the Focused Plant Survey on the Chevron Solar Project (Lucerne Valley) Site

Scientific Name	Common Name
GYMNOSPERMS	
EPHEDRACEAE	**EPHEDRA FAMILY**
Ephedra nevadensis	Nevada ephedra
Ephedra viridis	green ephedra
ANGIOSPERMS (DICOTYLEDONS)	
ASTERACEAE	**SUNFLOWER FAMILY**
Acamptopappus sphaerocephalus	rayless goldenhead
Ambrosia dumosa	burro bush
Anisocoma acaulis	scalebud
Baileya pleniradiata	wooly marigold
Calycoseris parryi	yellow tackstem
Chaenactis fremontii	desert pincushion
Chaenactis macrantha	bighead dustymaiden
Chaenactis stevioides	desert pincushion
Chrysothamnus sp.	rabbitbrush
Encelia actoni	Acton daisy
Eriophyllum wallacei	Wallace's woolly daisy
Glyptopleura marginata	crustleaf
Gutierrezia microcephala	sticky snakeweed
Hymenoclea salsola	burrobrush
Lepidospartum squamatum	scale-broom
Machaeranthera sp.	tansyaster
Malacothrix glabrata	desert dandelion
Monoptilon sp.	desert star
Palafoxia arida var. *arida*	Spanish needles
Prenanthella exigua	thorny skeleton plant
Psathyrotes annua	annual turtleback
Rafinesquia neomexicana	desert chicory
Stephanomeria exigua ssp. *exigua*	small wreathplant
Stephanomeria parryi	Parry rock pink
Stephanomeria pauciflora var. *pauciflora*	wire lettuce
Xylorhiza tortifolia var. *tortifolia*	Mojave aster
BORAGINACEAE	**BORAGE FAMILY**
Amsinckia tesselata	devil's lettuce
Cryptantha circumscissa	cushion catseye
Cryptantha pterocarya var. *pterocarya*	winged-nut forget-me-not
Tiquilia plicata	plicate tiquilia
BRASSICACEAE	**MUSTARD FAMILY**
Brassica tournefortii	wild turnip
Descurainia pinnata ssp. *glabra*	western tansymustard
Dithyrea californica	spectacle pod
Lepidium densiflorum	common pepperweed
Lepidium fremontii	desert peppergrass
*Sisymbrium irio**	London rocket
Stanleya pinnata var. *pinnata*	prince's plume

Appendix A (Continued)
Plant Species Observed During the Focused Plant Survey on the Chevron Solar Project (Lucerne Valley) Site

Scientific Name	Common Name
CACTACEAE	**CACTUS FAMILY**
Echinocactus polycephalus var. *polycephalus*	cottontop cactus
Opuntia basilaris var. *basilaris*	beavertail cactus
Opuntia echinocarpa	golden cholla
Opuntia ramosissima	pencil cholla
CAMPANULACEAE	**BELLFLOWER FAMILY**
Nemacladus glanduliferus var. *orientalis*	glandular thread plant
Parishella californica	parishella
CAPPARACEAE	**CAPER FAMILY**
Isomeris arborea	bladderpod
CHENOPODIACEAE	**GOOSEFOOT FAMILY**
Atriplex canescens	four-wing saltbush
Grayia spinosa	spiny hopsage
Krascheninnikovia lanata	winter fat
*Salsola tragus**	Russian thistle
FABACEAE	**LEGUME FAMILY**
Astragalus didymocarpus var. *dispermus*	dwarf white milk-vetch
Astragalus lentiginosus var. *variabilis*	freckled milkvetch
Astragalus sp.	astragalus
Psorothamnus fremontii	Fremont's dalea
GERANIACEAE	**GERANIUM FAMILY**
*Erodium cicutarium**	red-stemmed filaree
HYDROPHYLLACEAE	**WATERLEAF FAMILY**
Nama demissum var. *demissum*	purplemat
Phacelia crenulata var. *crenulata*	cleftleaf wildheliotrope
Phacelia crenulata var. *minutiflora*	phacelia
Phacelia sp.	phacelia
KRAMERIACEAE	**RHATANY FAMILY**
Krameria erecta	littleleaf rhatany
LAMIACEAE	**MINT FAMILY**
Salazaria mexicana	bladder sage
Salvia columbariae	chia
LOASACEAE	**LOASA FAMILY**
Mentzelia albicaulis	whitestem blazingstar
Mentzelia eremophila	pinyon blazingstar
Petalonyx thurberi ssp. *thurberi*	Thurber's sandpaper plant
MALVACEAE	**MALLOW FAMILY**
Sphaeralcea ambigua var. *rugosa*	desert globemallow
NYCTAGINACEAE	**FOUR O'CLOCK FAMILY**
Abronia pogonantha	white sand verbena
Abronia villosa var. *villosa*	sand verbena
Mirabilis bigelovii var. *bigelovii*	wishbone bush

Appendix A (Continued)
Plant Species Observed During the Focused Plant Survey on the Chevron Solar Project (Lucerne Valley) Site

Scientific Name	Common Name
ONAGRACEAE	**EVENING PRIMROSE FAMILY**
Camissonia boothii ssp. *desertorum*	desert suncup
Camissonia claviformis ssp. *aurantiaca*	brown-eyed evening primrose
PAPAVERACEAE	**POPPY FAMILY**
Argemone corymbosa	prickly poppy
Eschscholzia minutiflora	pygmy goldenpoppy
POLEMONIACEAE	**PHLOX FAMILY**
Eriastrum diffusum	miniature woollystar
Gilia latiflora	hollyleaf gilia
Linanthus aureus ssp. *decorus*	golden desert trumpets
Loeseliastrum matthewsii	desert calico
Loeseliastrum schottii	Schott's calico
POLYGALACEAE	**MILKWORT FAMILY**
Polygala acanthoclada	desert polygala
POLYGONACEAE	**BUCKWHEAT FAMILY**
Chorizanthe brevicornu	brittle spineflower
Chorizanthe rigida	spiny chorizanthe
Eriogonum deflexum ssp. *deflexum*	flat-topped buckwheat
Eriogonum fasciculatum var. *polifolium*	California buckwheat
Eriogonum inflatum	desert trumpet
Eriogonum maculatum	buckwheat
Eriogonum nidularium	birdnest buckwheat
Eriogonum pusillum	buckwheat
Oxytheca perfoliata	oxytheca
RANUNCULACEAE	**BUTTERCUP FAMILY**
Delphinium parishii ssp. *parishii*	Parish's larkspur
ROSACEAE	**ROSE FAMILY**
Coleogyne ramosissima	blackbrush
Prunus fasciculata	desert almond
Prunus fremontii	desert apricot
SCROPHULARIACEAE	**FIGWORT FAMILY**
Castilleja miniata ssp. *miniata*	giant red Indian paintbrush
SOLANACEAE	**NIGHTSHADE FAMILY**
Lycium fremontii	Fremont desert thorn
Lycium sp.	box-thorn
ZYGOPHYLLACEAE	**CALTROP FAMILY**
Larrea tridentata	creosote bush
ANGIOSPERMS (MONOCOTYLEDONS)	
LILIACEAE	**LILY FAMILY**
Yucca brevifolia	Joshua tree

Appendix A (Continued)
Plant Species Observed During the Focused Plant Survey on the Chevron Solar Project (Lucerne Valley) Site

Scientific Name	Common Name
POACEAE	**GRASS FAMILY**
Achnatherum hymenoides	Indian rice-grass
Bromus madritensis ssp. *madritensis**	compact brome
*Bromus tectorum**	cheat grass
*Hordeum murinum**	glaucous foxtail barley
Pleuraphis rigida	big galleta
*Schismus barbatus**	Mediterranean schismus
***Non-Native Species**	

CHAMBERS GROUP

APPENDIX B – BIOLOGIST RESUMES

KRIS ALBERTS

Senior Biologist

Mr. Alberts has 12 years of experience with a comprehensive background in conducting and managing biological surveys. As a senior wildlife biologist, he has conducted surveys for least Bell's vireo, coastal California gnatcatcher, burrowing owl, southwestern willow flycatcher, summer tanager, yellow warbler, nesting raptors, Stephen's kangaroo rat, Quino checkerspot butterfly, coast range newt, California red-legged frog, arroyo toad, Coachella Valley fringe-toed lizard, flat-tailed horned lizard, and desert tortoise. He has conducted nest monitoring for federally and state- listed species as well as baseline, reconnaissance-level, habitat assessment, and detailed wildlife surveys. He has also conducted diurnal and nocturnal bat surveys, bat exclusions, bat house installation and monitoring, in-stream assessments, and fish surveys. His experience also includes small mammal, reptile, and brown-headed cowbird trapping.

As a senior botanist, he has worked extensively in many southern California vegetation communities conducting line transect, point intercept, and stacked cube sampling, community mapping, species identification, and focused surveys (including spreading navarretia, Santa Ana River woollystar, slender-horned spineflower, Parry's spineflower, Plummer's mariposa lily, Algodones Dunes sunflower, Peirson's milk-vetch, Engelmann oak, Del Mar manzanita, and threadleaf brodiaea). He has performed vernal pool, riparian and coastal sage scrub restorations as well as exotic species removal programs. Combining his wildlife skills with his botany skills, he has conducted habitat assessments and focused wildlife surveys throughout San Diego, Orange, Los Angeles, San Bernardino, Riverside, and Imperial Counties. As a wetland scientist, he has performed wetland delineations and jurisdictional determinations in Mentone, Crafton, Diamond Bar, San Clemente, and the Salton Sea area of Riverside County and served as an assistant and project manager on numerous other delineation projects. Mr. Alberts has also investigated environmental impacts to existing or potential biological resources by construction activities, noise, and proposed developments. He has assisted with the implementation of mitigation programs for large-scale projects and mitigation compliance throughout southern California. He has authored and assisted with numerous biological documents, including reports on long-term federal projects and Biological Assessments for Section 7 consultation with USFWS. As a wildlife biologist, botanist, and group manager for previous federal projects, his responsibilities have included survey coordination, staff supervision, data collection, technical report writing, interacting effectively with resource/regulatory agency personnel, maintaining client communication, and meeting project deadlines.

Relevant Experience (Continued)

Key Strengths

- 12 years of Experience in Southern California
- Focused/Protocol Plant and Wildlife Surveys
- Biological Resource Analysis and Management
- Field Crew Management
- Wetland/Jurisdictional Delineations
- San Diego County Multiple Species Conservation Plan (MSCP)
- Multiple Methods of Vegetation Sampling
- Vegetation Mapping
- Extensive Knowledge of Flora and Fauna of Southern California
- Biological Assessments (Section 7)
- Habitat Restoration Programs
- Construction Mitigation Monitoring
- Extensive Working Knowledge of Regulations/ Guidelines:
- -Endangered Species Act
- -Clean Water Act
- -U.S. Fish and Wildlife Service
- -California Dept. of Fish and Game
- -U.S. Army Corps of Engineers
- Section 1602/401/404 permitting

Relevant Experience

Chevron Solar Project, Lucerne Valley, San Bernardino, California. Senior Biologist. Chevron proposes to develop a 516-acre solar photovoltaic power project in the Lucerne Valley. The plant will consist of crystalline silicon PV modules mounted upon single-axis trackers. Conducted Phase II: Burrow Survey for the burrowing owl, a California Species of Concern (CSC) and BLM sensitive species, according to the Burrowing Owl Survey Protocol and Mitigation Guidelines prepared by the California Burrowing Owl Consortium. Conducted Presence/Absence and Zone of Influence Surveys for the desert tortoise in accordance with protocols set forth by the U.S. Fish and Wildlife Service (USFWS 1992). Seven tortoises were identified during the surveys. Conducted avian point count surveys, and assisted with Mohave ground squirrel habitat assessment. Identified and delineated areas of the project site that fell under the regulatory jurisdiction of the USACE pursuant to Section 404 of the Federal Clean Water Act, CDFG jurisdiction pursuant to Section 1602. A Jurisdictional Delineation Report for the project site was completed after the field surveys describing the limits of jurisdiction pursuant to USACE, CDFG, and SWRCB (401). Permit applications for State Water Resources Control Board (SWRCB - 401), USACE (404) and CDFG (1600) will be submitted for project approval.

Environmental Assessment/Initial Study/Mitigated Negative Declaration, Fiber Optic Cable Installation, Victorville, CA to Las Vegas, NV, San Bernardino and Clark County – AT&T, sub to Forkert Engineering & Surveying, Inc. Senior Biologist. Conducted presence/absence surveys for the federal- and state-listed threatened desert tortoise in accordance with protocol set-forth by the USFWS. The project involves permitting applications, conducting biological surveys, vegetation mapping and jurisdictional delineations. Conducted general biological reconnaissance surveys to map the vegetation communities, to document the existing biological resources and to assess the habitat for its potential to support sensitive plant and wildlife species. Identified and delineated areas of the project site that fell under USACE, RWQCB, and CDFG jurisdiction. Monitored construction activities from Primm Nevada to Sloan.

Regulatory Agency Coordination, Background Data Review, Biological Reconnaissance, Protocol Surveys for Mohave Ground Squirrel, Burrowing Owl, and Desert Tortoise, Rosamond, Kern County – Capital Pacific Homes Inc. Chambers Group assisted Capital Pacific Homes with coordination and negotiations with regulatory and planning agencies with jurisdiction over the proposed residential development. Chambers Group conducted protocol surveys for the Mohave ground squirrel, burrowing owl, and the desert tortoise on this Mojave Desert Site. The project required review of previous biological studies of the site and the region and review of information available from the regulatory agencies files. The previous studies were updated with the results of the protocol sampling program.

Matthews Homes Development Project, San Bernardino County. Senior Biologist. Conducted focused surveys for the 88-acre development project. Project required a CDFG 2081 permit for the take of Mohave ground squirrel and burrowing owl. Conducted focused burrowing owl surveys, Zone of Influence surveys for the state- and federal-listed threatened desert tortoise, construction monitoring, 2081 permit compliance, and

Education

B.S., Natural Resources and Environmental Sciences, University of Illinois, Urbana-Champaign; 1996

Registration

Authorized for coastal California gnatcatcher, Southwestern willow flycatcher, and least Bell's vireo, USFWS Permit #TE-039640-2

California Dept. of Fish & Game Scientific Collector's Permit #SC-009155

Flat-tailed Horned Lizard authorization to take, possess and transport, 2007

Desert Tortoise Council Survey Techniques Workshop, 2007

Southwestern Willow Flycatcher Survey Training, Southern Sierra Research Station, 2007

Wetland Training Institute certified, 2007

Relevant Experience (Continued)

mitigation reports. Burrowing owl was identified during the surveys and the appropriate coordination with CDFG was initiated.

Construction Monitoring and Biological Surveys, Water Pipeline Installation Project, MCB Camp Pendleton, San Diego County – Orion. Provided construction monitoring for the installation of 5.5 miles of fiber optic backbone on MCB Camp Pendleton. Backbone installation involved Horizontal Directional Drilling (HDD) under the Santa Margarita River. The project passed through sensitive habitat including riparian vegetation that provide habitat for threatened or endangered species including the southwestern willow flycatcher, least Bell's vireo and arroyo southwestern toad; focused surveys were conducted in the project area for each of these sensitive species. Pre-construction nesting bird surveys were conducted prior to ground-breaking activities, and vegetation removal monitoring was provided concurrently with willow tree relocation.

Natural and Cultural Resources Management Plan, Rancho Las Flores Development, Hesperia, San Bernardino County – Rancho Las Flores, LLC. Senior Biologist. Assisted in revising outdated documents. Conducted field surveys on the project site prior to construction activities involving heavy equipment and/or windrow tree removal to determine if active nests of species protected by the Migratory Bird Treaty Act (MBTA) or by the California Department of Fish and Game (CDFG) were present in the construction zone or within a buffer of 500 feet. Pre-construction nesting/breeding surveys were conducted in all CDFG jurisdictional areas and within windrow trees.

Pre-Construction Surveys, Cleveland Avenue, Ontario, San Bernardino County – Brookfield Homes. Senior Biologist. Conducted field surveys on the project site prior to construction activities involving heavy equipment and/or windrow tree removal to determine if active nests of species protected by the Migratory Bird Treaty Act (MBTA) or by the California Department of Fish and Game (CDFG) were present in the construction zone or within a buffer of 500 feet. Pre-construction nesting/breeding surveys were conducted in all CDFG jurisdictional areas and within windrow trees.

Biological Survey and Cultural Resources Construction Monitoring, Fairfax Interchange Improvement, Bakersfield, Kern County – City of Bakersfield Public Works, sub to Parsons. Perform pre-construction biological monitoring of San Joaquin Kit Fox, burrowing owls and raptor nests and cultural resource construction monitoring associated with the Thomas Road Improvement Fairfax Interchange Project.

Initial Study, Lasselle Street Widening from John F. Kennedy Drive to Alessandro Boulevard, Moreno Valley – City of Moreno Valley, sub to PSOMAS. Provided jurisdictional determination. Conducted a habitat assessment from John F. Kennedy Dr. to just past Alessandro Blvd. along Lasselle St. Habitat suitable for the burrowing owl was present on the project site and so a Focus Burrow Survey for the burrowing owl will be required according to the western Riverside MSHCP. Co-authored the biological report documenting the findings of the habitat assessment. A Focused Burrow Survey was conducted during the breeding season for the burrowing owl. Wrote the report of findings of the Focused Burrow Survey.

Chambers Group

LAURA GORMAN

Associate Biologist

Ms. Gorman's diverse background in wildlife biology includes experience in a variety of habitats including marine, coastal sage, salt marsh, and riparian. She follows current survey protocols to perform vegetation and wildlife inventories and functional analysis surveys. She is knowledgeable in field identification of avian, amphibian, and fish species. Her strengths include conducting reconnaissance-level biological surveys, pre-construction surveys, focused surveys, and constructing monitoring for threatened wildlife such as the western snowy plover and burrowing owl. She has conducted presence/absence surveys for the California red-legged frog, mountain yellow-legged frog, and arroyo toad, and has assisted permitted biologists with focused surveys and nest monitoring for the California gnatcatcher and least bell's vireo. In addition, she has extensive experience in sensitive species relocation, particularly relating to Santa Ana sucker, Santa Ana speckled dace, arroyo chub, and coast range newt.

Key Strengths

Biological Resources Surveys

Environmental documentation preparation

Construction Monitoring

Jurisdictional Delineations

Vegetation Mapping

Relevant Experience

DESERT TORTOISE

Chevron Solar Project, Lucerne Valley, San Bernardino, California. Associate Biologist. Chevron proposes to develop a 516-acre solar photovoltaic power project in the Lucerne Valley. The plant will consist of crystalline silicon PV modules mounted upon single-axis trackers. Conducted Phase II: Burrow Survey for the burrowing owl, a California Species of Concern (CSC) and BLM sensitive species, according to the Burrowing Owl Survey Protocol and Mitigation Guidelines prepared by the California Burrowing Owl Consortium. Conducted Presence/Absence and Zone of Influence Surveys for the desert tortoise in accordance with protocols set forth by the U.S. Fish and Wildlife Service (USFWS 1992). Seven tortoises were identified during the surveys. Conducted avian point count surveys, and assisted with Mohave ground squirrel habitat assessment. Identified and delineated areas of the project site that fell under the regulatory jurisdiction of the USACE pursuant to Section 404 of the Federal Clean Water Act, CDFG jurisdiction pursuant to Section 1602. A Jurisdictional Delineation Report for the project site was completed after the field surveys describing the limits of jurisdiction pursuant to USACE, CDFG, and SWRCB (401). Permit applications for State Water Resources Control Board (SWRCB - 401), USACE (404) and CDFG (1600) will be submitted for project approval.

Surveys for the Environmental Assessment/Initial Study/Mitigated Negative Declaration, Fiber Optic Cable Installation, Victorville, CA to Las Vegas, NV, San Bernardino and Clark County – AT&T, sub to Forkert Engineering & Surveying, Inc. The project involves permitting applications, conducting biological surveys, vegetation mapping and jurisdictional delineations from the City of Victorville to Las Vegas. Conducted general biological reconnaissance surveys to map the vegetation communities, to document the existing biological resources and to assess the habitat for its potential to support sensitive plant and wildlife species. Conducted presence/absence surveys for the federal- and state-listed threatened desert tortoise (*Gopherus agassizii*) in accordance with protocol set-forth by the U.S. Fish and Wildlife Service (USFWS, 1992). Sign of desert tortoises including live tortoises, shell, bones, scutes, limbs, scat, burrows, pallets, tracks, egg shell fragments, courtship rings, drinking sites, and mineral licks were recorded.

AT&T Fiber Optic Cable – Las Vegas to Victorville Project, Multiple County – AT&T, sub to Forkert Engineering & Surveying, Inc. Conducted general biological reconnaissance surveys to: map the vegetation communities; document the existing biological resources; and assess the habitat's potential to support sensitive plant and wildlife species. Coordinated with BLM to prepared and compose a Noxious

Relevant Experience (Continued)

Weed Management Plan and a Habitat Restoration Plan. Provided construction monitoring in accordance with project permits for the protection of the desert tortoise. Prepared post-construction desert tortoise monitoring and environmental compliance reports. Provided environmental awareness training for all individuals involved with the project. Presence/absence desert tortoise surveys were conducted in California from Stoddard Wells Rd. in Victorville to Slash X Ranch, from Halloran Summti Rd. to Cima Rd. in Baker, and From Nipton Rd, to State Line (Primm, Nevada). Surveyed the project area and the 100 ft. and 300 ft. ZOI transect lines. Tortoise burrows, scat, and a scute were observed in various places along the route. Surveys followed protocol set out by USFWS. Detailed notes and GPS points were recorded when any desert tortoise sign was observed or detected. Conducted construction monitoring from Los Vegas, Nevada to Primm, Nevada. Conducted nesting bird surveys, and assisted with clearance surveys for the desert tortoise. Monitoring included trenching, pipe installation, backfilling, restoration, compaction, vault installation, proofing, cable pulling, splicing, and post installation/replacement. Eighteen tortoises were found along the project site in Nevada and only three had to be handled, in order to be moved away from the approaching construction equipment.

Biological and Cultural Resources Surveys, Jurisdictional Delineations, Pre-Construction and Construction Monitoring, Track Upgrade Project, Thermal, CA to Yuma, AZ, San Bernardino and Imperial County – Union Pacific Railroad, Yuma Subdivision, sub to Parsons Water & Infrastructure. Associate Biologist. The project involves conducting biological surveys, vegetation mapping and wetland delineations along 100-mile-long corridor. Services include a reconnaissance surveys, focused sensitive species surveys (Yuma clapper rail surveys, California black rail surveys, least Bell's vireo, southwestern willow flycatcher, Coachella Valley fringe-toed lizard surveys, desert tortoise presence/ absent surveys, desert pupfish, Peirson's milk vetch surveys, and Algodones Dunes sunflower surveys), and vegetation communities surveys and mapping within the 200-foot right-of-way. The field survey focuses primarily on determining the potential habitat for federal- and state-listed plant and wildlife species. Performed construction monitoring services over many sections of the route.

Regulatory Agency Coordination, Background Data Review, Biological Reconnaissance, Protocol surveys for Mohave Ground Squirrel, Burrowing Owl, and Desert Tortoise, Rosamond, Kern County – Capital Pacific Homes Inc. Conducted a focused survey for the desert tortoise and burrowing owl. Walked transects by foot in order to cover 100% of the project site. Conducted transects for the zone of influence (ZOI) at 100, 300, 600, 1200, and 2400ft.

Desert Tortoise Clearance Surveys, Palmdale Water Reclamation Plant Stage 5 Effluent Management Facilities, Palmdale, Los Angeles County – Los Angeles County Sanitation District. The Palmdale Water Reclamation Plant Stage Five Effluent Management Facilities project involves construction of storage reservoirs. As part of USFWS approval, the Districts have committed to install a fence around the storage reservoirs to keep tortoises out. Clearance surveys will be performed within the area upon completion of the fence to ensure desert tortoises have not been trapped inside the fenced area. This desert tortoise clearance survey within the fenced area will follow the appropriate USFWS protocol.

BURROWING OWL

Protocol-level MSHCP Burrowing Owl Survey, Calimesa, Riverside County – Sunlite Development. Task Manager. Conducted a four-day protocol-level survey for burrowing owl. Recorded GPS locations of potential burrow sites and examined all suitable habitat for sign of live owls. Reported all results in an updated habitat assessment of the project site.

Phase II Burrowing Owl Survey, Etiwanda Housing Development, Rancho Cucamonga, San Bernardino County – Sierra Pacific Enterprises. Conducted a Phase II Burrowing Owl survey over a 115-acre site proposed for development in the City of Etiwanda, CA. Active burrowing owl burrows were identified and their locations were recorded using GPS technology. Prepared a report of findings.

Relevant Experience (Continued)

Medical Real Estate Development, Riverside County. Project Manager. Conducted Phase III burrowing owl surveys for the Medical Real Estate Development located in Sun City (APNs: 333-050-012-9, 333-050-009-7, 333-050-010-7, & 333-050-011-8), Riverside County, California. The 10-acre site was surveyed for burrowing owl and nesting birds, and consisted of 4 separate site visits one-hour before sunrise to two-hours after sunrise for four non-consecutive days. No owls were identified using the burrows. A memo report was sent to local Agencies and DFG.

Education

B.S., Biology, University of California, Los Angeles; 2004

Registration

California Dept. of Fish and Game Scientific Collector's Permit # SC 008778

United States Fish and Wildlife Service Office, Carlsbad Branch, Passed Quino Checkerspot Butterfly (QCB) Exam to Conduct Surveys under Permitted QCB Biologist, February 11, 2009.

Rancho Santa Ana Botanical Garden Botany Course, February 2009

Rancho Santa Ana Botanical Garden Plant Survey Techniques Course, February 2009

BLM Flat-Tailed Horned Lizard Training, May 2007

Desert Tortoise Council Surveys Techniques and Handling Workshop, November 2006

Earth Skills Tracking Skills Workshop, Fall 2006

Sea and Sage Audubon Society Advanced Bird Observation Class, Spring 2007

Sea and Sage Audubon Society Bird Identification Class, Spring 2006

Sea and Sage Audubon Society Bird Sound Identification Class, Fall 2006

Southern Sierra Research Station Southwestern Willow Flycatcher Workshop, May 2005

Nesting Bird and Burrowing Owl Survey, Lancaster, Los Angeles County – Matthews Homes. Conducted a focused survey for nesting birds and burrowing owls throughout the project site utilizing approximately 30- or 100-foot belt transects, depending on the density of vegetation. Potential habitat for nesting birds and burrowing owl within the project site and within a 150-meter buffer around the site was surveyed according to protocol approved by the CDFG (Burrowing Owl Consortium, 1993). Evidence of nesting birds and/or burrowing owl within the project site was documented with digital photographs, Global Positioning System (GPS) coordinates, and markings on a topographic map.

Phase III Burrowing Owl Survey, Village Park, San Jacinto, Riverside County – Distinguished Homes. Conducted a Phase III Burrowing Owl survey for a proposed residential development project known as Village Park in the City of San Jacinto (Tract No. 31806), Riverside County, California. The three-day protocol-level survey consisted of belt transects to allow for 100% visual coverage of the project site. The City of San Jacinto required CEQA compliance documents for this project. Chambers Group's analysis of the project resulted in the preparation of an Initial Study/Mitigated Negative Declaration (IS/MND) which included biological and air quality technical studies and reports.

NESTING BIRDS

Nesting Bird Survey, Cooks Canyon Crib Dam Reconstruction, Glendale, Los Angeles County – Los Angeles County Department of Public Works, Environmental Planning. Conducted a survey for nesting birds protected by the Migratory Bird Treaty Act of 1918. The surveys were required in support of services for removal of sediment buildup within the Cooks Canyon Crib Dam Debris Basin. Sediment buildup has impaired the drainage of waters from the debris basin, resulting in year-round ponding. Recorded all observations in the field on standardized datasheets. The results of the survey were summarized in a memorandum report, which included recommendations to minimize potential impacts to nest sites.

Construction Monitoring, Arroyo Trabuco Creek Railroad Bridge Replacement, San Juan Capistrano, Orange County – Southern California Regional Rail Authority. Monitored compliance of activities with the 1600 Streambed Alteration Agreement during the replacement of the railroad bridge above Arroyo Trabuco Creek. Conducted preconstruction surveys for nesting birds and bats. Monitored vegetation removal and protection of the creek during construction.

Environmental Compliance Services, Pacific Street Bridge, Oceanside, San Diego County – City of Oceanside, sub to Harris & Associates. Conducted periodic nesting bird surveys, fish seining, and construction monitoring for the Pacific Street Bridge construction site in the City of Oceanside. Provided results in detailed monitoring

Relevant Experience (Continued)

reports to the client. Chambers Group was a member of the construction management team (Harris & Associates) for the construction of the Pacific Street bridge. This bridge replaces an earthen crossing near the mouth of the San Luis Rey River adjacent to the Oceanside Harbor. Chambers Group is responsible for environmental aspects during the bidding process for the construction contractor. Chambers Group staff conducted monitor services during construction to assure compliance with the Environmental Impact Report (EIR) and all environmental permits. These permits addressed the U.S. Army Corps of Engineers (USACE) concerns in the waters of the United States and also the San Luis Rey River is a flood control channel. California Department of Fish and Game (CDFG) 1602 permit and a U.S. Fish and Wildlife (USFWS) Section 7 addressed the protected species in the project area. The San Diego Regional Water Quality Control Board (RWQCB) has issued a 401 permit. Chambers Group prepared a Mitigation Monitoring Implementation Plan, Environmental Awareness Program and conducted environmental compliance monitoring during the two year construction period for the bridge.

Least Bells' Vireo and Southwestern Willow Flycatcher Biological Surveys, SR-60 and Grand Avenue Interchange Improvement Project, Diamond Bar, Los Angeles County – EIP Associates, a Division of PBS&J, sub to Sage Environmental Group. Chambers Group biologists conducted presence/absence focused surveys for southwestern willow flycatcher and least Bell's vireo at a section of Diamond Bar Creek known as Brea Wash and three tributaries that flow into the wash from under the freeway. All potential habitats within the project site were surveyed and nesting status of each pair was documented. Maps included project location and observed species locations and individual nest sites where found.

Cantu-Gallaeno at I-15 Exchange Project, Corona, Riverside County – Riverside County Transportation Department, sub to Harris & Associates. Conducted Habitat Assessment for the burrowing owl on a 38-acre project site prior to grading for road extension. Upon locating a burrowing owl on site, conducted phase III focused surveys to determine if the bird was nesting or wintering on site. The surveys were done in accordance with the California Burrowing Owl Consortium guidelines (1993). A biological technical report of findings was prepared.

Biological and Cultural Resources Surveys, Jurisdictional Delineations, Pre-Construction and Construction Monitoring, Track Upgrade Project, Thermal, CA to Yuma, AZ, San Bernardino and Imperial County – Union Pacific Railroad, Yuma Subdivision, sub to Parsons Water & Infrastructure. Conducted least bell's vireo, burrowing owl, and desert tortoise focused surveys, a southwestern willow flycatcher habitat assessment, and wetland delineation along a 100-mile-long stretch of railway. Located and documented possible desert tortoise burrow and sign as well as burrowing owl sign including burrow sites, pellets, scat, and live owl sightings. Identified areas of suitable habitat along the 100-mile stretch for southwestern willow flycatcher focused surveys.

Scoping of CEQA Compliance and Permitting Issues for the Dana Point Desalination Facility, Dana Point, Orange County – Municipal Water District of Orange County. Conducted construction monitoring for the western snowy plover during the installation of a test slant well drill adjacent to the San Juan Creek mouth. Construction was halted if the western snowy plover approached the drilling site. Wildlife presence/absence and nesting location surveys of other avian species were also performed.

LISA WADLEY

Staff Wildlife Biologist

Ms. Wadley has over six years of experience and a comprehensive background in conducting biological surveys, implementing surveys for regional habitat conservation plans such as the Western Riverside MSHCP, and mitigation monitoring. She has a comprehensive background in biological resources assessment, habitat conservation planning, and raptor management. As a wildlife biologist, she has conducted surveys for nesting raptors, western burrowing owl, coastal California gnatcatcher, kit fox, desert tortoise, and sensitive plant and habitat communities. She has also conducted reconnaissance-level and detailed wildlife surveys, investigated environmental impacts in terms of biological resources, and assisted with the implementation of mitigation programs for various-sized projects, and performed restoration and mitigation compliance throughout San Bernardino, Riverside, and Los Angeles counties.

Key Strengths

Determined species potentials to occur on project sites and make recommendations accordingly.

Conducted background research and data collection (i.e. literature and aerial photographs) in order to make appropriate evaluations.

Created raptor data dictionary for GPS for use in conducting raptor nest surveys and burrowing owl focused surveys.

Regular attendant at the Burrowing Owl Consortium symposium and meetings, the Wildlife Society conferences and courses, Advanced Raptor Identification workshops, and Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) workshops and meetings.

Have written reports and associated documents in an accurate and thorough manner.

Relevant Experience

AT&T Fiber Optic Cable – Las Vegas to Victorville Project, Multiple County – AT&T, sub to Forkert Engineering & Surveying, Inc. Chambers Group conducted general biological reconnaissance surveys to: map the vegetation communities; document the existing biological resources; and assess the habitat's potential to support sensitive plant and wildlife species. Provided construction monitoring services in accordance with project permits for the protection of the desert tortoise. Prepared post-construction desert tortoise monitoring and environmental compliance reports.

Biological Construction Monitoring, Track Upgrade Project, Thermal, CA to Yuma, AZ, San Bernardino and Imperial County – Union Pacific Railroad, Yuma Subdivision, sub to Parsons Water & Infrastructure. Assisted in presence/absence surveys prior to construction activities. Monitoring and BMP compliance reports were submitted daily during the project.

MSHCP Habitat Assessment, Cactus Avenue Widening Project, Moreno Valley, Riverside County. Chambers Group, Inc., was retained by the City of Moreno Valley to conduct a habitat assessment for burrowing owl (*Athene cunicularia*), Stephen's kangaroo rat (*Dipodomys stephensi*) and sensitive plant species. Chambers Group biologists also assessed the site for vernal pools and potential jurisdictional waters. Authored report summarizing results of the habitat assessment; purpose of the report was to document the results of the habitat assessment, sensitive habitat evaluation, and provide recommendations for MSHCP required focused surveys and was written in accordance with MSHCP guidelines.

Cactus Avenue Widening Project, Focused Western Burrowing Owl Survey, City of Moreno Valley, Riverside County – City of Moreno Valley. Conducted a MSHCP Protocol Burrowing Owl Survey for approximate two mile road widening project from the 215 freeway north on Cactus Avenue to Heacock Street in the City of Moreno Valley. The objective of the surveys was to identify areas where burrowing owls were occupying and/or nesting within or adjacent to the project area. Surveys were conducted throughout the project site utilizing approximately 30- or 100-foot belt transects, depending on the density of vegetation, in order to maintain 100 percent coverage, which is required by the Department of Fish and Game. Any active and inactive nests and/or burrows on site as well as within the 150 foot buffer were recorded on data sheets. A single burrowing owl was observed within the

Education

B.A., Biology, California State University, San Bernardino; 2002

A.S., Agricultural Technology, Mt. San Antonio College, Walnut, California; 1996

Memberships

Association of Environmental Professionals (AEP)

Audubon Society

Burrowing Owl Consortium

Cornell Lab of Ornithology

Cougar Fund

Raptor Research Organization

Western Field Ornithologist

Western Section; Wildlife Society

The Wildlife Society

Relevant Experience (Continued)

150 meter buffer zone. It was determined that the indivdual did not have a mate and was not, at the time of the survey actively nesting. After completing the field surveys, methodology and findings were summarized and incorporated into a memo report.

Burrowing Owl Pre-Construction Survey, Lasselle Street Widening Project, Moreno Valley, Riverside County –City of Moreno Valley. Walked transects according to The Burrowing Owl Consortium guidelines (1993), on appropriate habitat in search for the presence of burrowing owls or any sign of burrowing owls within or adjacent to Lasselle Street Widening project area prior to grading for the widening of the road. No burrowing owls were found and a letter report was written to document the survey.

MSHCP Habitat Assessment, Ironwood Avenue Widening Project, Moreno Valley, Riverside County. Chambers Group, Inc., was retained by the City of Moreno Valley to conduct a habitat assessment for burrowing owl (Athene cunicularia), Stephen's kangaroo rat (Dipodomys stephensi) and sensitive plant species. Assessed the site for vernal pools and potential jurisdictional waters. Authored report summarizing results of the habitat assessment; purpose of the report was to document the results of the habitat assessment, sensitive habitat evaluation, and provide recommendations for MSHCP required focused surveys and was written in accordance with MSHCP guidelines.

Ironwood Avenue Widening Project, Focused Western Burrowing Owl Survey, City of Moreno Valley, Riverside County – City of Moreno Valley. Conducted a MSHCP Protocol Burrowing Owl Survey for approximate two mile road widening project from Perris Boulevard east on Ironwood Avenue to Nanson Street in the City of Moreno Valley. The objective of the surveys was to identify areas where burrowing owls were occupying and/or nesting within or adjacent to the project area. Surveys were conducted throughout the project site utilizing approximately 30- or 100-foot belt transects, depending on the density of vegetation, in order to maintain 100 percent coverage, which is required by the Department of Fish and Game. Any active and inactive nests and/or burrows on site as well as within the 150 foot buffer were recorded on data sheets. No burrowing owl and/or burrows or sign were observed on the project site. No owls were observed in the adjacent buffer zone during the focused survey. After completing the field surveys, methodology and findings were summarized and incorporated into a memo report.

Reche Vista Road Realignment Natural Environmental Study, Moreno Valley, Riverside County. Chambers Group, Inc., was retained by the City of Moreno Valley to conduct a general biological assessment for the realignment of Reche Vista Road in the City of Moreno Valley, Riverside County. The California Department of Transportation (Caltrans - NEPA lead agency) and the City of Moreno Valley (City - CEQA lead agency), County of Riverside, CA, proposed to "fill in" a highway gap by realigning Reche Vista Drive between the Perris Boulevard/Heacock Street Intersection and the northerly Moreno Valley City limits. Authored Natural Environmental Study document summarizing results of the habitat assessments; purpose of the report was to document the results of the habitat assessments, sensitive habitat evaluation, potentential for jurisdictional waters, permitting requirements, and provide recommendations for MSHCP required focused surveys and was written in accordance with MSHCP guidelines and Catrans Natural Environmental Study guidelines.

Nesting Bird Survey, City of Santa Clarita, Los Angeles County – LADPW. Conducting nesting bird surveys for Vasquez Canyon Bouquet Creek Bridge Project. Nesting birds were located and mitigation measures will be monitored during construction activities.

Relevant Experience (Continued)

Nesting Bird Survey and Monitoring, City of Sierra Madre, Los Angeles County – LADPW. Conducting nesting bird surveys along North Sierra Madre Road for two days and conducted construction monitoring.

Nesting Bird Survey, City of Glendale, Los Angeles County – LADPW. Conducting nesting bird surveys in the Cooks Canyon debris basin crib dam M1-A Dewatering system for two weeks, three days each week for a total of six surveys.

LSA Associates, Inc. (LSA). Assistant Wildlife Biologist. Conducted general biological surveys and wildlife habitat assessments, and majority of the western burrowing owl (Athene cunicularia hypugaea) surveys, raptor nesting surveys and monitoring for the LSA Riverside office. Biological monitoring for construction projects; including writing and implementing contractor awareness programs for the burrowing owl, nesting raptors, kangaroo rat, California gnatcatcher, and Least's bell's vireo. Writing biological assessments, biological constraints reports for CEQA compliance, WRCMSHCP compliance, and Caltrans biological reports. Assignments included writing memoranda to clients regarding compliance and recommendations of actions to take on projects. Writing Burrowing Owl Mitigation Plans for compliance with CDFG permits.

Research Experience

Institute for Bird Populations, Statewide Survey of Western Burrowing Owls, Point Reyes Station, California. Volunteer surveyor for San Bernardino County. Surveyed a block in San Bernardino County to aid the Institute in regional and statewide population estimates. Information gathered has and will be important resource for Burrowing Owl conservation efforts in California and has been widely used and cited by government agencies and conservation-oriented non-governmental organizations

San Jacinto Wildlife Area, San Jacinto, California — Western Burrowing Owl Study. Volunteer. Purpose of research: To gain knowledge of the burrowing owl populations on the San Jacinto Wildlife Area. Conducted owl surveys within the wildlife area.

Biological Surveys and Focused Western Burrowing Owl Surveys — Southern California Edison. Conducted general biological assessments and focused burrowing owl surveys for the Southern California Edison's substations in Menifee, Riverside County. Responsible for coordinating, attending meetings, and conducting surveys for expansions of the substations.

Biological Surveys and Monitoring — Southern California Gas Company. Conducted biological assessments and focused avian and mammal surveys for pipeline projects for the Southern California Gas Company in Riverside County. Responsible for conducting pre-construction surveys on the pipeline projects in the City of Riverside. Executed contractor education programs for the listed and sensitive species and nesting birds. Monitored the removal and replacement of pipeline in the streambeds and the placement of revetment pads to reduce flow.

Specialized Training

Federal Fish and Wildlife Permit (MB-119560-0), Special Purpose: Salvage Birds

Festival of Owls Research Workshop, Houston Nature Center, Houston, Minnesota, March 2008

Master Desert Naturalist Certificate, the Living Desert University. The Master Desert Naturalist certificate program offers in-depth instructions in our local desert environment. Feature class content on native flora and fauna, ecology, geology and natural history with an emphasis on direct experience. The classes are a

Relevant Experience (Continued)

blend of informative classroom lectures and discussions, as well as ‘real world’ experiences; including tracking, and interpretive hikes and walks led by LDU instructors.]

Festival of Owls Research Workshop, Houston Nature Center, Houston, Minnesota, March 2006

Mohave Ground Squirrel Workshop, Western Section of the Wildlife Society, Ridgecrest, April 2005

Habitat Conservation Planning and the Endangered Species Act, University of Riverside Extension Center, January – March 2005

Endangered Species Regulation, Conservation Planning and Permits for Development, UCLA Extension Center, Los Angeles, March 2004

California Environmental Quality Act (CEQA) Workshop, AEP, Fall 2003

California Burrowing Owl Symposium, the Western Section of the Wildlife Society, Sacramento, November 2003

Desert Tortoise Surveying, Monitoring, Workshop, and Handling Techniques Workshop, The Desert Tortoise Council, Ridgecrest, 2003

NICHOLE CERVIN

Associate Biologist

Ms. Cervin is familiar with the plant communities throughout California and she specializes in the identification and analysis of California vegetation. She has more than four years of experience conducting reconnaissance-level, focused, and quantitative vegetation surveys; mapping vegetation; performing restoration compliance inspections. Ms. Cervin has also authored environmental and biological sections for a variety of documents. In addition, Ms. Ms. Cervin has experience with plant ecology and physiology techniques, and statistical analysis.

Key Strengths

- Vegetation Surveys
- Focused Plant Surveys
- Identification of sensitive plant and wildlife species
- Habitat Restoration
- Weed Identification and Management

Relevant Rare Plant Survey Experience

Focused Plant Surveys For The Federal Bureau of Reclamation within the Upper San Joaquin River, Fresno County, California. Associate Botanist. Conducted protocol focused plant surveys and habitat assessments on a 6,000-acre site in the upper San Joaquin River watershed within the Sierra National Forest, California. The surveys were performed in an effort to determine the presence / absence of sensitive plant species within the project site. The project also involved working with a team of biologists with different backgrounds to determine any possible biological issues and solutions to possible issues for this controversial water storage basin project.

Functional Analysis Comparison Along the San Gabriel River, Los Angeles County -- LACDPW. Assistant Botanist. Collected data for a complete functional analysis, based on the USACE Hydrogeomorphic Analysis and Habitat Evaluation Procedures, within the Angeles National Forest, California. The functional analysis was conducted to assess and compare the biological resources along the length of the San Gabriel River, from the West Fork downstream to the Santa Fe Reservoir Spreading Grounds. Data related to the biological and physical function were collected at each permanent data collection transect location in the upland and riparian habitats of the site.

Focused Plant Survey, Crafton Hills Reservoir Expansion and Pipeline Project, Crafton, San Bernardino County – Department of Water Resources, sub to Environmental Science Associates. Associate Botanist. Conducted a protocol focused plant survey within and adjacent to the project footprint to determine the presence / absence of several sensitive plant species including Santa Ana River woollystar, slender-horned spineflower, Nevin's barberry, Parish's checkerbloom, Parry's spineflower, Plummer's mariposa lily, and other sensitive plant species. A general biological reconnaissance survey was also conducted and included mapping of vegetation communities and a habitat assessment to determine the potential of the site to support sensitive plant species. Following all surveys a Biotechnical Report was prepared that was incorporated into the EIR for this project.

Focused Plant Survey East Branch Extension Phase II Project, San Bernardino, Riverside, Los Angeles County – Department of Water Resources, sub to Environmental Science Associates. Associate Botanist. Conducted a protocol focused survey for sensitive plant species including Santa Ana River woollystar, slender-horned spineflower, Nevin's barberry, Parish's

Relevant Experience (Continued)

checkerbloom, Parry's spineflower, Plummer's mariposa lily, and other sensitive plant species and documented the population size and locations for these species throughout the property. A general biological reconnaissance survey was conducted on four separate alternative proposed pipeline line sites and at two potential reservoir sites. The surveys included vegetation communities mapping and an assessment of the site for its potential to support sensitive plant species. Prepared reports documenting the findings for the alternative project sites.

Biological and Botanical Surveys and Monitoring, Big Dalton Dam Sediment Removal, Glendora, Los Angeles County – Los Angeles County Department of Public Works, Water Resources Division. Associate Biologist. Coordinated and conducted field surveys including vegetation mapping, focused plant surveys, amphibian, reptile, fish, avian, and mammal surveys, stream assessments and macroinvertebrate collections from above the reservoir to 2 miles downstream of the Big Dalton Dam. Data and analysis of the project is provided in the Pre- and Post-Dewatering Biological Technical Report for the Big Dalton Dam Reservoir Cleanout Project.

Biological and Botanical Resources Surveys, Pre-Construction and Construction Monitoring, Track Upgrade Project, Thermal, CA to Yuma, AZ, San Bernardino and Imperial County – Union Pacific Railroad, Yuma Subdivision, sub to Parsons Water & Infrastructure. Associate Botanist. Conducted a protocol focused survey for sensitive plant species including Peirson's milk-vetch and Algodones Dunes sunflower in many sections of the 100-mile-long project corridor. Also performed a protocol desert tortoise presence/absents survey along several sections of the corridor. Performed a biological reconnaissance survey and created vegetation communities maps along sections of. The biological reconnaissance focused primarily on determining the potential habitat for federal- and state-listed plant and wildlife species.

Botanical Surveys and Monitoring, Live Oak Reservoir Cleanout Project, La Verne, Los Angeles County – Los Angeles County Department of Public Works, Water Resources Division. Coordinated and conducted field surveys including vegetation mapping and pre–dewatering and post-dewatering vegetation surveys from above the reservoir to 0.5 miles downstream of the Live Oak Dam, which is located within the Angeles National Forest. The two-striped garter snake, a California Species of Concern, was found on the project site, which triggered daily monitoring during construction. No mortalities of sensitive species were observed during construction.

Sierra Conservation Center Jamestown Effluent Disposal Pipeline Project, Jamestown, Tuolumne County – Department of General Services, Real Estate Services Division. Assistant Botanist. Provided biological resources services for the project which included an Oak Tree resources field survey, report, and mitigation and monitoring plan, as well as pre-construction surveys for special status plant species such as Chinese Camp brodiaea, Merced clarkia, Congdon's woolly sunflower, Hatweg's pseudobahia, Layne's ragwort, and California vervain. Habitat assessment surveys were conducted for Valley elderberry longhorn beetle, the hirsute sierra sideband snail, and the California tiger salamander.

Phase II Big Tujunga Wash Mitigation Bank Master Mitigation Plan Implementation, Sunland, Los Angeles County – Los Angeles County

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Education

M.S., Biology, California State University, Fullerton; 2006

B.S., Biology, California State University, Fullerton; 2002

Registrations, Certifications, and Affiliations:

California Dept. of Fish and Game Scientific Collector's Permit, #SC-009906

Ecological Society Of America Member, Current

Southern California Botanists Member, Current

Desert Tortoise Surveying Techniques Workshop, Desert Tortoise Council, 2007: qualified desert tortoise monitor

Relevant Experience (Continued)

Department of Public Works. Associate Botanist. Monitored the revegetation enhancement of upland and riparian habitat in the mitigation bank. The revegetation components of the master plan included the restoration of existing riparian habitat by removing exotic plant species and revegetating with native plant species. The plan provided for the creation of coastal sage scrub and oak woodland habitats, and programs were designed to reduce the impact of exotic wildlife species on the native communities. A comprehensive monitoring program was developed for the site, including the use of functional analysis to assess the progress of the restoration efforts. A report summarizing the survey results was submitted after each inspection or combined with larger annual reports.

Habitat Restoration Plan and Monitoring, Newell Road at Fairside Road Project, Malibu, Los Angeles County – Los Angeles County Department of Public Works. Associate Botanist. Performed preliminary soil analyses and determined the types of vegetation that were impacted by a landslide. Assisted the Project Manager with preparing a Planting Plan that included a plant palette and a planting diagram. Co-authored a final Habitat Restoration and Monitoring Plan (HRMP). The HRMP provided site preparation and planting details, nursery and maintenance contractor coordination guidelines, performance standards for the plantings, and reporting requirements. These comprehensive Plans were submitted to the agencies for review and served as the framework for future onsite mitigation efforts.

Environmental Assessment/Initial Study/Mitigated Negative Declaration, Fiber Optic Cable Installation, Victorville, CA to Las Vegas, NV, San Bernardino and Clark County – AT&T, sub to Forkert Engineering & Surveying, Inc. Conducted general biological reconnaissance surveys to: map the vegetation communities; document the existing biological resources; and assess the habitat's potential to support sensitive plant and wildlife species. Coordinated with CDFG to identify mitigation measures and monitoring requirements for the desert tortoise and other sensitive species based on the Biological Evaluation in order to streamline the Consistency Determination process. Coordinated with BLM to prepare and compose a Noxious Weed Management Plan and a Habitat Restoration Plan. Provided construction monitoring in accordance with project permits for the protection of the desert tortoise. Prepared post-construction desert tortoise monitoring and environmental compliance reports.

Relevant Rare Plant Species Experience

Fiber Optic Line Installation from the City of Victorville, California to the City of Primm, Nevada – AT&T, sub to Forkert Engineering. Associate Biologist. Conducted general biological reconnaissance surveys to: map the vegetation communities; document the existing biological resources; and assess the habitat's potential to support sensitive plant and wildlife species. Coordinated with CDFG to identify mitigation measures and monitoring requirements for the desert tortoise and other sensitive species based on the Biological Evaluation in order to streamline the Consistency Determination process. Coordinated with BLM to prepared and compose a Noxious Weed Management Plan and a Habitat Restoration Plan. Provided construction monitoring in accordance with project permits for the protection of the desert tortoise. Prepared post-construction desert tortoise monitoring and environmental compliance reports.

Relevant Experience (Continued)

AT&T - Environmental Assessment/Initial Study/Mitigated Negative Declaration Studies, Fiber Optic Cable Installation Monitoring, Victorville, CA to Las Vegas, NV, San Bernardino and Clark County – AT&T, sub to Forkert Engineering & Surveying, Inc. Conducted general biological reconnaissance surveys to: map the vegetation communities; document the existing biological resources; and assess the habitat's potential to support sensitive plant and wildlife species. Coordinated with BLM to prepare and compose a Noxious Weed Management Plan and a Habitat Restoration Plan. Provided construction monitoring in accordance with project permits for the protection of the desert tortoise. Prepared post-construction desert tortoise monitoring and environmental compliance reports. Provided monitoring services during the construction activities over a 4 month period. 18 tortoises were identified and avoided during construction activities. Lead for succulent translocations during construction.

Biological and Cultural Resources Surveys, Jurisdictional Delineations, Pre-Construction and Construction Monitoring, Track Upgrade Project, Thermal, CA to Yuma, AZ, San Bernardino and Imperial County – Union Pacific Railroad, Yuma Subdivision, sub to Parsons Water & Infrastructure. Associate Botanist. Performed biological reconnaissance surveys and vegetation mapping along sections of a 100-mile-long corridor within the 200-foot right-of-way (ROW). The field survey focused primarily on determining the potential habitat for federal- and state-listed plant and wildlife species. Performed a focused plant survey and desert tortoise presence/absence surveys along several sections of the ROW.

Regulatory Agency Coordination, Background Data Review, Biological Reconnaissance, Protocol surveys for Mohave Ground Squirrel, Burrowing Owl, and Desert Tortoise, Rosamond, Kern County – Capital Pacific Homes Inc. Assisted Capital Pacific Homes with coordination and negotiations with regulatory and planning agencies with jurisdiction over the proposed residential development. Assisted with protocol surveys for the Mohave ground squirrel, burrowing owl, and the desert tortoise on this Mojave Desert Site. The project required review of previous biological studies of the site and the region and review of information available from the regulatory agencies files. The previous studies were updated with the results of the protocol sampling program.

Environmental Compliance Services, Pacific Street Bridge, Oceanside, San Diego County – City of Oceanside, sub to Harris & Associates. Construction activities involved the installation of a bridge over the San Luis Rey River, replacing an earthen crossing near the mouth of the San Luis Rey River adjacent to the Oceanside Harbor. Suitable habitat for sensitive species including California gnatcatcher, light-footed clapper rail, and nesting bird existed adjacent to the project footprint; steelhead trout were identified upstream of the project site. Chambers Group provided construction and noise monitoring to ensure permit compliance and prevent negative impacts to the environment. An environmentally sensitive area (ESA) was outlined with silt fencing directly adjacent to the project area, and fish seining as well as periodic nesting bird surveys were conducted within this ESA. Chambers Group implemented an off-site mitigation and exotic removal program, prepared a Mitigation Monitoring Implementation Plan, and provided restoration monitoring. Results of services were provided in detailed monitoring reports to the client.

Relevant Experience (Continued)

Desert Tortoise Clearance Surveys, Palmdale Water Reclamation Plant Stage 5 Effluent Management Facilities, Palmdale, Los Angeles County – Los Angeles County Sanitation District. The Palmdale Water Reclamation Plant Stage Five Effluent Management Facilities project involves construction of storage reservoirs. As part of USFWS approval, the Districts have committed to install a fence around the storage reservoirs to keep tortoises out. Clearance surveys will be performed within the area upon completion of the fence to ensure desert tortoises have not been trapped inside the fenced area. This desert tortoise clearance survey within the fenced area will follow the appropriate USFWS protocol.

Rancho Las Flores Natural and Cultural Resources Management Plan, Hesperia, San Bernardino County – Rancho Las Flores, LLC. Conducted reconnaissance surveys, suitability evaluations, and focused surveys for special-status species. A Habitat Suitablility Evaluation (HSE) was conducted for southwestern willow flycatcher, least Bell's vireo, burrowing owl, California red-legged frog, Mohave ground squirrel, long-eared owl, bald eagle, prairie falcon, and two-striped garter snake. The HSE was necessary to identify, in specific detail, the portions of the total project site that should be subject to focused (protocol-level) surveys. The HSE identified what portions of the 641 acres of riparian habitat on the site will be subject to focused surveys for least Bell's vireo and southwestern willow flycatcher. The condition of the existing riparian habitat (i.e. amount of suitable understory vegetation) was evaluated to determine the specific areas where focused surveys are warranted; and identified what portions of the 771 acres of grassland habitat will be subject of focused surveys for burrowing owl. It also identified what portions of the entire site will be subject to focused sensitive plant surveys. The HSE utilized the updated vegetation community map (Chambers Group, 2004) to identify general habitat distribution on the site. The focused survey areas were plotted onto sensitive resource maps to be used in the field. Focused surveys were performed in 2005.

PAUL MORRISSEY

Staff Biologist

Mr. Morrissey has more than 9 years experience participating in and conducting terrestrial and aquatic/marine studies, with a comprehensive background in both collecting data and performing biological monitoring surveys. He is an experienced biologist, field manager and project manager. He has coordinated with state and federal agencies to develop and implement effective mitigation and monitoring plans for listed and sensitive species and to ensure compliance with state and federal laws. He has conducted focused surveys for amphibians, desert tortoise, burrowing owl, small mammals, and protected avian species. He has worked extensively with protected and sensitive fish species such as the Santa Ana sucker, Santa Ana speckled dace, arroyo chub, and rainbow trout. He has also conducted stream and sediment sampling for macro-invertebrates, radio telemetry tracking, electro-fishing surveys, and environmental compliance monitoring. Working on complex linear projects such as the PG&E and SDG&E power transmission line projects has made him familiar with the flora and wildlife species within Riverside, San Diego, and Imperial Counties. He has conducted wetlands delineations pursuant to Section 404 of the CWA and riparian delineations pursuant to Section 1601/1603 of the CDFG Code. He has also prepared jurisdictional delineation reports that were used in the preparation of permit applications for the USACE, CDFG, and RWQCB.

Key Strengths

- 9 Years of Experience in Southern California
- Biological resource analysis and management
- Jurisdictional Delineations
- Wetlands Delineations
- Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP), Riparian/Riverine
- Habitat restoration enhancement programs
- Construction mitigation monitoring
- Extensive working knowledge of regulations/guidelines:
- Endangered Species Act
- Clean Water Act
- U.S. Fish and Wildlife Service
- California Dept. of Fish and Game
- U.S. Army Corps of Engineers
- Section 1602/401/404 permitting

Relevant Experience

Chevron Solar Project, Lucerne Valley, San Bernardino, California. Field Manager. Chevron proposes to develop a 516-acre solar photovoltaic power project in the Lucerne Valley. The plant will consist of crystalline silicon PV modules mounted upon single-axis trackers. Conducted Phase II: Burrow Survey for the burrowing owl, a California Species of Concern (CSC) and BLM sensitive species, according to the Burrowing Owl Survey Protocol and Mitigation Guidelines prepared by the California Burrowing Owl Consortium. Conducted Presence/Absence and Zone of Influence Surveys for the desert tortoise in accordance with protocols set forth by the U.S. Fish and Wildlife Service (USFWS 1992). Seven tortoises, five carcasses, and many burrows and tortoise sign such as tracks and scat were identified during the surveys. Conducted avian point count surveys, and assisted with Mohave ground squirrel habitat assessment. Identified and delineated areas of the project site that fell under the regulatory jurisdiction of the USACE pursuant to Section 404 of the Federal Clean Water Act, CDFG jurisdiction pursuant to Section 1602. A Jurisdictional Delineation Report for the project site was completed after the field surveys describing the limits of jurisdiction pursuant to USACE, CDFG, and SWRCB (401). Permit applications for State Water Resources Control Board (SWRCB - 401), USACE (404) and CDFG (1600) will be submitted for project approval.

Environmental Assessment/Initial Study/Mitigated Negative Declaration, Fiber Optic Cable Installation, Victorville, CA to Las Vegas, NV, San Bernardino and Clark County – AT&T, sub to Forkert Engineering & Surveying, Inc. Field Manager. The project involves permitting applications, conducting biological surveys, vegetation mapping and jurisdictional delineations from the City of Victorville to Las Vegas. Conducted general biological reconnaissance surveys to map the vegetation communities, to document the existing biological resources and to assess the habitat for its potential to support sensitive plant and wildlife

Relevant Experience (Continued)

Education

M.S., Biology, California State University, Dominguez Hills; 2005

B.S., Biology California State University, Dominguez Hills; 2001

Registrations, Certifications, and Affiliations

U.S. Fish & Wildlife Service Permit, #TE182550-0

California Dept. of Fish and Game Scientific Collector's Permit, #SC-008151

U.S. Army Corps of Engineers, Wetland Training Institute, Wetland Delineator Certification, 2007

Desert Tortoise Surveying Techniques Workshop, Desert Tortoise Council, 2007; qualified desert tortoise biologist

CDFG authorized to take, possess, and transport flat-tailed horned lizards, 2007

2007 Marvin M. Black Excellence in Partnering Award for the San Gabriel River Project

Southwestern Willow Flycatcher Workshop, Southern Sierra Research Station; 2006

Basic Tracking, Earth Skills, 2006

Electrofishing and Fish Handling Techniques, 2008

species. Identified and delineated areas of the project site that fell under the regulatory jurisdiction of the USACE pursuant to Section 404 of the Federal Clean Water Act, CDFG jurisdiction pursuant to Section 1602. A Jurisdictional Delineation Report for the project site was completed after the field surveys describing the limits of jurisdiction pursuant to USACE, CDFG, and SWRCB (401). Permit applications for State Water Resources Control Board (SWRCB - 401), USACE (404) and CDFG (1600) were submitted for project approval. Conducted presence/absence surveys for the federal- and state-listed threatened desert tortoise (*Gopherus agassizii*) in accordance with protocol set-forth by the U.S. Fish and Wildlife Service (USFWS, 1992). Sign of desert tortoises including live tortoises, shell, bones, scutes, limbs, scat, burrows, pallets, tracks, egg shell fragments, courtship rings, drinking sites, and mineral licks were recorded.

AT&T Fiber Optic Cable – Las Vegas to Victorville Project, Multiple County – AT&T, sub to Forkert Engineering & Surveying, Inc. Conducted general biological reconnaissance surveys to: map the vegetation communities; document the existing biological resources; and assess the habitat's potential to support sensitive plant and wildlife species. Coordinated with BLM to prepared and compose a Noxious Weed Management Plan and a Habitat Restoration Plan. Provided construction monitoring in accordance with project permits for the protection of the desert tortoise. Prepared post-construction desert tortoise monitoring and environmental compliance reports. Provided environmental awareness training for all individuals involved with the project. Conducted jurisdictional delineations fro California Department of Fish and Game along the linear fiber optic line for AT&T. Presence/absence desert tortoise surveys were conducted in California from Stoddard Wells Rd. in Victorville to Slash X Ranch, from Halloran Summti Rd. to Cima Rd. in Baker, and From Nipton Rd, to State Line (Primm, Nevada). Surveyed the project area and the 100 ft. and 300 ft. ZOI transect lines. Tortoise burrows, scat, and a scute were observed in various places along the route. Surveys followed protocol set out by USFWS. Detailed notes and GPS points were recorded when any desert tortoise sign was observed or detected. Conducted construction monitoring from Los Vegas, Nevada to Primm, Nevada. Conducted nesting bird surveys, and assisted with clearance surveys for the desert tortoise. Monitoring included trenching, pipe installation, backfilling, restoration, compaction, vault installation, proofing, cable pulling, splicing, and post installation/replacement. Eighteen tortoises were found along the project site in Nevada and only three had to be handled, in order to be moved away from the approaching construction equipment.

Biological and Cultural Resources Surveys, Jurisdictional Delineations, Pre-Construction and Construction Monitoring, Track Upgrade Project, Thermal, CA to Yuma, AZ, San Bernardino and Imperial County – Union Pacific Railroad, Yuma Subdivision, sub to Parsons Water & Infrastructure. Staff Biologist. The project involves conducting biological surveys, vegetation mapping and wetland delineations along 100-mile-long corridor. Services include a reconnaissance surveys, focused sensitive species surveys (Yuma clapper rail surveys, California black rail surveys, least Bell's vireo, southwestern willow flycatcher, Coachella Valley fringe-toed lizard surveys, desert tortoise presence/ absent surveys, desert pupfish, Peirson's milk vetch surveys, and Algodones Dunes sunflower surveys), and vegetation communities surveys and mapping within the 200-foot right-of-way. The field survey focuses primarily on determining the potential habitat for federal- and state-listed plant and wildlife species. Conducted burrowing owl surveys, general reconnaissance surveys, pre-construction sweeps, and personnel environmental awareness trainings for all construction personnel.

Relevant Experience (Continued)

Regulatory Agency Coordination, Background Data Review, Biological Reconnaissance, Protocol surveys for Mohave Ground Squirrel, Burrowing Owl, and Desert Tortoise, Rosamond, Kern County – Capital Pacific Homes Inc. Chambers Group assisted Capital Pacific Homes with coordination and negotiations with regulatory and planning agencies with jurisdiction over the proposed residential development. Chambers Group conducted protocol surveys for the Mohave ground squirrel, burrowing owl, and the desert tortoise on this Mojave Desert Site. The project required review of previous biological studies of the site and the region and review of information available from the regulatory agencies files. The previous studies were updated with the results of the protocol sampling program.

Barstow Desert Tortoise Surveys, Cellular Tower Project, Barstow, San Bernardino County – Terracon. Conducted a presence/absence survey on the site for the federal- and state-listed threatened desert tortoise (Gopherus agassizii) in accordance with protocol set-forth by the U.S. Fish and Wildlife Service (USFWS, 1992). The survey was conducted on foot over all areas of suitable habitat utilizing 30-foot belt transects to provide 100 percent coverage. A Zone of Influence (ZOI) survey was conducted in the areas directly adjacent to and surrounding the project site where suitable desert tortoise habitat existed and in which tortoises may directly or indirectly be affected by project operations. The ZOI survey was conducted within a buffer of 100, 300, 600, 1,200, and 2,400 feet parallel to the edge of the project boundaries in accordance with USFWS protocol. Sign of desert tortoises including live tortoises, shell, bones, scutes, limbs, scat, burrows, pallets, tracks, egg shell fragments, courtship rings, drinking sites, and mineral licks were recorded. After completing the field surveys, findings were summarized in a letter report.

BURROWING OWL SURVEYS

Matthews Homes Development Project, San Bernardino County. Project Manager for the 88-acre development project. Project required a CDFG 2081 permit for the take of Mohave ground squirrel and burrowing owl. Tasks include scheduling surveys, supervising staff, ensuring complete data collection, providing quality and control report preparation, interacting effectively with agency personnel, maintaining client communication, maintaining budget parameters, and meeting project deadlines. Conducted Mohave ground squirrel habitat assessment, focused burrowing owl surveys, Zone of Influence surveys for the state- and federal-listed threatened desert tortoise, construction monitoring, 2081 permit compliance, and mitigation reports. Burrowing owl were identified during the surveys, authored a Passive Relocation Plan for CDFG, and assisted Jeff Kidd with the passive relocation. Coordinated with Tonya Moore (CDFG) regarding the mitigation for this project site.

Medical Real Estate Development, Riverside County. Project Manager. Conducted Phase III burrowing owl surveys for the Medical Real Estate Development located in Sun City (APNs: 333-050-012-9, 333-050-009-7, 333-050-010-7, & 333-050-011-8), Riverside County, California. The 10-acre site was surveyed for burrowing owl and nesting birds, and consisted of 4 separate site visits one-hour before sunrise to two-hours after sunrise for four non-consecutive days. No owls were identified using the burrows. A memo report was sent to local Agencies and DFG.

Biological Reconnaissance Survey, 80-Acre Residential Development, Apple Valley, San Bernardino County – KJAJ Development. Task Manager. Conducted a biological reconnaissance survey of 80 acres. Conducted habitat assessment for Mohave ground squirrel and burrowing owl. Identified a pair of burrowing owls onsite. Studies were conducted in order to comply with CEQA and with local regulations.

Biological and Cultural Resources Inventory, 20-Acre Development Project, Hesperia, San Bernardino County – D.A. Development. Task Manager for housing development project in Hesperia. Conducted a biological reconnaissance survey of 20 acres. Conducted habitat assessment for Mohave ground squirrel and burrowing owl. These studies were conducted in order to comply with CEQA and with local regulations.

Relevant Experience (Continued)

MSHCP Habitat Assessment, 3.07-Acre Site, Sun City, Riverside County – Hollander Management, LLC. Conducted a Multiple Species Habitat Conservation Plan (MSHCP) habitat assessment for burrowing owl and sensitive plants on the 3.07 acre site according to Riverside County guidelines. A report will be prepared based on these findings and submitted to the County.

Cantu-Gallaeno at I-15 Exchange Project, Corona, Riverside County – Riverside County Transportation Department, sub to Harris & Associates. Performed presence/absence surveys for burrowing owl in Delhi-Sand Loving Fly known population. No burrowing owl were identified.

REBECCA ALVIDREZ

Associate Biologist

Ms. Alvidrez has five years of experience working on research for federal and state-listed plant species of California's central coast including Monterey gilia and Monterey spineflower. She has experience with live-trapping, banding, blood sampling of common passerines including species such as yellow-headed blackbirds. She has experience in conducting biological reconnaissance-level vegetation surveys, plant transects, and restoration monitoring. She has co-authored environmental and biological sections for a variety of reports, including official habitat restoration plans.

Key Strengths

- Vegetation surveys
- Restoration monitoring
- Habitat Restoration plans
- Focus wildlife/vegetation surveys
- Construction Mitigation Monitoring
- Archeological surveys
- Archeological Phase II testing

Relevant Rare Plant Species Experience

Crafton Hills Reservoir Expansion and Pipeline Project, Crafton, San Bernardino County – Department of Water Resources, sub to Environmental Science Associates. Associate Botanist participating in conducting a focused plant survey for the entire project area for the presence/absence of Santa Ana River woollystar, slender-horned spineflower, Nevin's barberry, Parish's checkerbloom, Parry's spineflower, Plummer's mariposa lily, and other sensitive plant species. Prepared a Biotechnical Report following all surveys that was incorporated into the EIR for this project.

Biological and Cultural Resources Surveys, Jurisdictional Delineations, Pre-Construction and Construction Monitoring, Track Upgrade Project, Thermal, CA to Yuma, AZ, San Bernardino and Imperial County – Union Pacific Railroad, Yuma Subdivision, sub to Parsons Water & Infrastructure. Associate biologist. Conducted biological reconnaissance surveys focusing primarily on vegetation communities surveys and mapping along a 100-mile corridor within the 200-foot right-of-way. The field survey focused primarily on determining the potential habitat for federal- and state-listed plant and wildlife species. Performed focus surveys determine the presence or absence onsite of 2 federal- and state-listed sensitive species for Peirson's milk vetch (*Astragalus magdalenae* var. *peirsonii*) and Algodones Dunes sunflower (*Helianthus niveus* ssp. *tephrodes*). Surveyed from mile post 698 to 715 by walking transects on both sides of the railroad tracks and recording the plant species found. Reconnaissance surveys involved surveys for sensitive species (Yuma clapper rail surveys, California black rail surveys, least Bell's vireo, southwestern willow flycatcher, Coachella Valley fringe-toed lizard surveys, desert pupfish). Conducted a focused survey for the desert tortoise covering 100% of the project site for 43 miles from mile post 679 to mile post 722. Assisted with the determination of the jurisdictional limits of the various governmental agencies that regulate wetlands and waterways. The effort involved the evaluation and documentation of over 250 drainage features, including nearly 100 separate wetland delineations.

Aerial Mapping and Survey of Endangered Plant Population – Santa Barbara County. Associate Botanist, assisted in conducting a comprehensive field survey mapping the distribution of a protected plant species population throughout the 2,000 acre property. Chambers Group was retained to advise this client in the resolution of land use challenges relevant to managing the protection of a federally-listed endangered and state-listed rare plant species with oil and gas exploration on private land. The sensitive plant species was encroaching into operational areas and impeeding normal facility operations and maintenance, generating a unique challenge to the property owner. Following the survey, Chambers Group facilitated discussions with the U.S. Fish and Wildlife Service and the California Department of Fish and Game and obtained authorization for the client to conduct limited maintenance activities in specified facility locations to control encroachment of the sensitive plant species. In addition, Chambers Group evaluated long-term control measures to restrict the encroachment of the sensitive plant species into operational areas. A

Relevant Experience (Continued)

Education
B.S., Ecology and Evolution, University of California, Santa Cruz; 2003
Specialized Training
Plant Identification for Coastal Southern California (Wetland Training Institute, Inc.) – San Diego, California 2007
The Grass Family: Identification and Ecology, Rancho Santa Ana Botanic Garden, 2007
Surveying, Monitoring, and Handling Techniques Workshop, Desert Tortoise Council, 2008
Elkhorn Slough Coastal Training Program Workshop for California Red-legged frog
Elkhorn Slough Coastal Training Program Workshop for California Tiger Salamander
Elkhorn Slough Coastal Training Program Workshop for Western Pond Turtle
Registration and Certification
Scientific Collector's Permit # 009931, California Department of Fish and Game
Permit to take, possess, and transport Flat-tailed Horned Lizards as a biological monitor and during surveys for public agencies, California Department of Fish and Game
Memberships
Member of Member or California Native Grasslands Association (CNGA)
Member of California Society for Ecological Restoration (SERCAL)
California Invasive Plant Council (Cal IPC)

summary report of recommended control measures was subsequently provided. This project is ongoing. We have been asked to maintain confidentiatlity on behalf of the client with regards to this project.

Riparian Restoration, Enhancement Plan and Monitoring, Santa Margarita River Flood Plain, Marine Corps Air Station, Camp Pendleton, Oceanside, San Diego County – U.S. Navy, MCAS Camp Pendleton, sub to Insight Environmental, Engineering & Construction, Inc. Associate Botanist responsible for the monitoring restoration activities occurring on 55 acres of fragmented river floodplain adjacent to the Santa Margarita River and monitoring the ground water. Additional tasks included the sampling of the stacked cube method within the existing least Bell's vireo habitat and riparian vegetation adjacent to the helicopter landing area on Camp Pendleton as well as the restored areas. Success criteria will be primarily a function of how suitable the habitat is for vireo. Chambers Group designed and oversaw installation of nearly 50 acres of riparian woodland at the Marine Corps Air Station, Camp Pendleton. The comprehensive design included resource protection, weeding, plant and seed lists, planting methods and care after planting, including irrigation. The vegetation grew with exceptional speed; many plants that had been in liner containers in early 2006 were nearly indistinguishable from mature native-grown plants of the same species by early 2007. Chambers Group provided monitoring, instructions and advice to the landscape contractor, and assistance with topics including weed control throughout the growing period. Chambers Group also carried out technical functions apart from restoration, including monitoring of ground water, tree height related to aircraft safety, and various wildlife monitoring functions.

Environmental Compliance Services, Pacific Street Bridge, Oceanside, San Diego County – City of Oceanside, sub to Harris & Associates. Associate Botanist co-authored the Mitigation Monitoring Plan of an off-site mitigation and exotic removal program. Chambers Group implemented the off-site mitigation and exotic removal program, and provided restoration monitoring. Results of services were provided in detailed monitoring reports to the client. Construction activities involved the installation of a bridge over the San Luis Rey River, replacing an earthen crossing near the mouth of the San Luis Rey River adjacent to the Oceanside Harbor.

Biological Resources Surveys, Revegetation and Mitigation Monitoring for the Marblehead Coastal Project, San Clemente, Orange County – SunCal Properties. Associate Botanist, participated in conducting preliminary soil experiments for soil productivity from previously collected soil to determine the soil ammendments needed prior to planting. Chambers Group is providing environmental consulting services, which include supplying the technical assistance needed to acquire a Coastal Development Permit and ensure compliance with all other applicable permits, as well as conduct focused gnatcatcher surveys, construction monitoring, ecological restoration and performance monitoring for 5 years. Chambers Group will ensure compliance with all conditions of the Habitat Management Plan (HMP) during initial vegetation clearing/grubbing, erosion control and project construction phases. Chambers Group prepared the upland portion of the HMP to protect, restore, and manage native grasslands, coastal bluff scrub, the Blochman's Dudleya Reserve, and approximately 70 acres of coastal sage scrub located within the Marblehead property. The mitigation plan describes site preparation methods, plant and seed lists, plant installation techniques, and maintenance procedures for restoration of the upland habitats to be installed as required in the

Relevant Experience (Continued)

Biological Opinion. Chambers Group developed performance standards and an onsite production nursery to accommodate several thousand plants and store over four tons of seed. Restoration efforts include enhancement of native grasslands and coastal bluff scrub. The HMP was designed to maximize the habitat value for coastal California gnatcatcher and other species dependent on sage scrub as well as to enhance the functional value of the preserved/restored wetlands within the canyons by improving connectivity and allowing for wildlife movement between each area.

Conceptual Mitigation and Monitoring Plan, 256.9-acre Proposed Development Site, Yorba Linda, Orange County – Pulte Homes. Designed mitigation programs, both on-site and off-site. Located suitable mitigation areas and made necessary arrangements with state park. Extensive biological resources surveys were conducted to document the biological conditions on several large restoration sites on behalf of a private developer. Tract #s 15566, 16320 & 16321. The purpose of the surveys was to identify the species of plants and wildlife present and to map the vegetation communities and wildlife habitat on the site. The habitats were assessed for the potential to support listed and/or sensitive species of plants and wildlife.

Tree Assessment Survey, Biological Services for South Region Landfills, Santa Ana, Orange County – County of Orange Integrated Waste Management Department. Measured the diameter at breast height, tree height, and tree canopy of all California Sycamore (*Platanus racemosa*) trees in a specific canyon. Took photos and GPS points of each tree as well. All trees were in good health and most were very large. Conducting preliminary soil experiments for soil productivity using previously collected soil to determine the possible soil ammendment needed for planting. Provided biological consulting services to IWMD for South County landfills. The project involved surveys and monitoring of endangered species, mitigation monitoring, brown-headed cowbird trapping, state and federal regulatory planning, CEQA documents, as-needed biological services, contractor coordination, biological services at closed landfills project management, and a restoration training course.

Biological Surveys, San Juan Capistrano Lower Landslide, San Juan Capistrano, Orange County – City of San Juan Capistrano Public Works. Associate Biologist. Assisted with mitigation monitoring and reporting. The project involved grading and removal of debris from a landslide area, and stabilizing an existing water pipeline. Chambers Group conducted a biological reconnaissance survey of the site, vegetation mapping, construction monitoring, and restoration of approximately three acres of coastal sage and one acre of disturbed coastal sage scrub. Prepared monitoring reports which documented construction and restoration activities as well as species observed onsite.

Biological Surveys and Monitoring, Big Dalton Dam Sediment Removal, Glendora, Los Angeles County – Los Angeles County Department of Public Works, Water Resources Division. Participated in field surveys including vegetation mapping, focused plant surveys, amphibian, reptile, fish, avian, and mammal surveys, stream assessments and macroinvertebrate collections from above the reservoir to 2 miles downstream of the Big Dalton Dam. Data and analysis of the project is provided in the Pre- and Post-Dewatering Biological Technical Report for the Big Dalton Dam Reservoir Cleanout Project.

San Gabriel River Sediment Management Plan, Biological Surveys & Monitoring, Azusa, Los Angeles County – Los Angeles County Department of Public Works. Associate Botantist participated in conducting vegetation mapping and performance monitoring. Chambers Group performed a determination of jurisdictional wetlands, the study area includes from Morris Dam downstream to Foothill Boulevard and Brown's Gulch. A functional analysis methodology was formulated to assess and compare the biological resources of the two sites. Data related to the biological, physical, and biogeochemical functions at each site were collected on transects in upland, riparian, and aquatic habitats to complete the functional analysis. A biological resources assessment report was written which included the methodology used for field survey

Relevant Experience (Continued)

and functional analysis techniques, a discussion of existing conditions at both sites, and the functional analysis comparing the sites.

REVELENT WILDLIFE EXPERIENCE

AT&T – Surveys for Environmental Assessment/Initial Study/Mitigated Negative Declaration, Fiber Optic Cable Installation, Victorville, CA to Las Vegas, NV, San Bernardino and Clark County – AT&T, sub to Forkert Engineering & Surveying, Inc. The project involves permitting applications (Section 7, Section 404, 401, 1600 and WDR), conducting general and focused biological surveys, construction monitoring, GIS mapping and jurisdictional delineations along the linear project area. Conducted general biological reconnaissance surveys to: map the vegetation communities; document the existing biological resources and; assess the habitat's potential to support sensitive plant and wildlife species. Conducted presence/absence surveys for the federal- and state-listed threatened desert tortoise (Gopherus agassizii) in accordance with protocol set-forth by the U.S. Fish and Wildlife Service (USFWS, 1992). Sign of desert tortoises including live tortoises, shell, bones, scutes, limbs, scat, burrows, pallets, tracks, egg shell fragments, courtship rings, drinking sites, and mineral licks were recorded. Phase II involves construction monitoring for cable installation activities. Phase I involved conducting general biological reconnaissance surveys to map the vegetation communities, to document the existing biological resources and to assess the habitat for its potential to support sensitive plant and wildlife species. Performed biological monitoring services over a 4 month period, including pre-construction sweeps, construction monitoring, and report submittals.

AT&T – Surveys for Environmental Assessment/Initial Study/Mitigated Negative Declaration, Fiber Optic Cable Installation, Victorville, CA to Las Vegas, NV, San Bernardino and Clark County – AT&T, sub to Forkert Engineering & Surveying, Inc. The project involves permitting applications (Section 7, Section 404, 401, 1600 and WDR), conducting general and focused biological surveys, construction monitoring, GIS mapping and jurisdictional delineations along the linear project area. Conducted general biological reconnaissance surveys to: map the vegetation communities; document the existing biological resources and; assess the habitat's potential to support sensitive plant and wildlife species. Conducted presence/absence surveys for the federal- and state-listed threatened desert tortoise (Gopherus agassizii) in accordance with protocol set-forth by the U.S. Fish and Wildlife Service (USFWS, 1992). Sign of desert tortoises including live tortoises, shell, bones, scutes, limbs, scat, burrows, pallets, tracks, egg shell fragments, courtship rings, drinking sites, and mineral licks were recorded. Phase II involves construction monitoring for cable installation activities. Phase I involved conducting general biological reconnaissance surveys to map the vegetation communities, to document the existing biological resources and to assess the habitat for its potential to support sensitive plant and wildlife species. Performed biological monitoring services over a 4 month period, including pre-construction sweeps, construction monitoring, and report submittals.

Biological and Cultural Resources Surveys, Jurisdictional Delineations, Pre-Construction and Construction Monitoring, Track Upgrade Project, Thermal, CA to Yuma, AZ, San Bernardino and Imperial County – Union Pacific Railroad, Yuma Subdivision, sub to Parsons Water & Infrastructure. Assistant biologist. Conducted biological reconnaissance surveys focusing primarily on vegetation communities surveys and mapping along a 100-mile corridor within the 200-foot right-of-way. The field survey focused primarily on determining the potential habitat for federal- and state-listed plant and wildlife species. Performed focus surveys determine the presence or absence onsite of 2 federal- and state-listed sensitive species for Peirson's milk vetch (*Astragalus magdalenae var. peirsonii*) and Algodones Dunes sunflower (*Helianthus nivenus ssp. tephrodes*). Surveyed from mile post 698 to 715 by walking transects on both sides of the railroad tracks and recording the plant species found. Reconnaissance surveys involved surveys for sensitive species (Yuma clapper rail surveys, California black rail surveys, least Bell's vireo,

Relevant Experience (Continued)

southwestern willow flycatcher, Coachella Valley fringe-toed lizard surveys, desert pupfish). Conducted a focused survey for the desert tortoise covering 100% of the project site for 43 miles from mile post 679 to mile post 722. Surveys were conducted following Fish and Wildlife Service protocols of 1992. Old desert tortoise burrows and possible old scat were detected on site. GPS locations, photos, and detailed notes were taken upon detection of all sign. No desert tortoise or desert tortoise carcasses were detected on site. Assisted with the determination of the jurisdictional limits of the various governmental agencies that regulate wetlands and waterways. The effort involved the evaluation and documentation of over 250 drainage features, including nearly 100 separate wetland delineations. Conducted pre-construction surveys for desert tortoise and construction monitoring from Sidewinder Road to HWY 78 in Glamis.

Education
B.S., Ecology and Evolution, University of California, Santa Cruz; 2003

Specialized Training
Plant Identification for Coastal Southern California (Wetland Training Institute, Inc.) – San Diego, California 2007
The Grass Family: Identification and Ecology, Rancho Santa Ana Botanic Garden, 2007
Surveying, Monitoring, and Handling Techniques Workshop, Desert Tortoise Council, 2008
Elkhorn Slough Coastal Training Program Workshop for California Red-legged frog
Elkhorn Slough Coastal Training Program Workshop for California Tiger Salamander
Elkhorn Slough Coastal Training Program Workshop for Western Pond Turtle

Registration and Certification
Scientific Collector's Permit # 009931, California Department of Fish and Game
Permit to take, possess, and transport Flat-tailed Horned Lizards as a biological monitor and during surveys for public agencies, California Department of Fish and Game

Memberships
Member of Member or California Native Grasslands Association (CNGA)
Member of California Society for Ecological Restoration (SERCAL)
California Invasive Plant Council (Cal IPC)

Rancho Las Flores Natural and Cultural Resources Management Plan, Hesperia, San Bernardino County – Rancho Las Flores, LLC. Chambers Group biologists conducted reconnaissance surveys, suitability evaluations, and focused surveys for special-status species. A Habitat Suitablility Evaluation (HSE) was conducted for southwestern willow flycatcher, least Bell's vireo, burrowing owl, California red-legged frog, Mohave ground squirrel, long-eared owl, bald eagle, prairie falcon, and two-striped garter snake. The HSE was necessary to identify, in specific detail, the portions of the total project site that should be subject to focused (protocol-level) surveys. Conducted focused surveys for plants and firedamage on site during 2008.

Regulatory Agency Coordination, Background Data Review, Biological Reconnaissance, Protocol surveys for Mohave Ground Squirrel, Burrowing Owl, and Desert Tortoise, Rosamond, Kern County – Capital Pacific Homes Inc. Chambers Group assisted Capital Pacific Homes with coordination and negotiations with regulatory and planning agencies with jurisdiction over the proposed residential development. Conducted protocol surveys for the burrowing owl and the desert tortoise on this Mojave Desert Site. The project required review of previous biological studies of the site and the region and review of information available from the regulatory agencies files. The previous studies were updated with the results of the protocol sampling program.

Nesting Bird Survey, City of Glendale, Los Angeles County – LADPW. Conducting nesting bird surveys in the Cooks Canyon debris basin crib dam M1-A Dewatering system for two weeks, three days each week for a total of six surveys.

Environmental Compliance Services, Pacific Street Bridge, Oceanside, San Diego County – City of Oceanside, sub to Harris & Associates. Construction activities involved the installation of a bridge over the San Luis Rey River, replacing an earthen crossing near the mouth of the San Luis Rey River adjacent to the Oceanside Harbor. Suitable habitat for sensitive species including California gnatcatcher, light-footed clapper rail, and nesting bird existed adjacent to the project footprint; steelhead trout were identified upstream of the project site. Chambers Group provided construction and noise monitoring to ensure permit compliance and prevent negative impacts to the environment. An environmentally sensitive area (ESA) was outlined with silt fencing directly adjacent to the project area, and fish seining as well as periodic nesting bird surveys were conducted within this ESA. Chambers Group implemented an off-site mitigation and exotic removal program,

Relevant Experience (Continued)

prepared a Mitigation Monitoring Implementation Plan, and provided restoration monitoring. Results of services were provided in detailed monitoring reports to the client.

Desert Tortoise Clearance Surveys, Palmdale Water Reclamation Plant Stage 5 Effluent Management Facilities, Palmdale, Los Angeles County – Los Angeles County Sanitation District. The Palmdale Water Reclamation Plant Stage Five Effluent Management Facilities project involves construction of storage reservoirs. As part of USFWS approval, the Districts have committed to install a fence around the storage reservoirs to keep tortoises out. Clearance surveys will be performed within the area upon completion of the fence to ensure desert tortoises have not been trapped inside the fenced area. This desert tortoise clearance survey within the fenced area will follow the appropriate USFWS protocol.

Water Reclamation Project in Palmdale, Los Angeles, California - Los Angeles Sanitation District. Monitored all construction activities which included; the installation of a pipeline, vaults, pump station, and reservoirs. No tortoises were detected/observed on the project site; however, old desert tortoise burrows without recent sign were observed.

SARAIAH SKIDMORE

Associate Biologist/Botanist

Ms. Skidmore has four years of experience in identification of vertebrate species as well as major plant communities and vegetation in southern California. Ms. Skidmore has experience conducting biological reconnaissance-level surveys, habitat assessments, mapping vegetation, plant transects, construction monitoring, and jurisdictional delineations. Following current protocols, she has conducted focused surveys for federal- and state-listed species and California special concern species including desert tortoise, burrowing owl, snowy plover, least Bell's vireo, coastal California gnatcatcher, Plummer's mariposa lily, and thread-leaved brodiaea. Ms. Skidmore has authored and co-authored environmental and biological sections of reports. In addition, Ms. Skidmore has experience with GIS analysis.

Key Strengths

- Focus Surveys for Sensitive Species
- Biological Resources Surveys
- Habitat Assessments
- Construction Mitigation Monitoring

Relevant Experience

CEQA Services, IS/MND, Smith Correctional Facility Expansion, Banning, Riverside County – County of Riverside Department of Facilities Management, Real Estate Division, sub to ICF International. Conducted a habitat assessment on the project site following a literature review (including searching the latest editions of the California Natural Diversity Data Base and California Native Plant Society Electronic Inventory). A cultural resources records search was conducted with the South Central Coastal Archaeological Information Center located at the University of California, Riverside to determine the extent and results of previous cultural resources studies that have been conducted in and near the project area. Co-authored the results of the survey. The area of the project site was 139,000 square feet. The county of Riverside required CEQA compliance documents for this project. The project required an Initial Study (IS) and Mitigated Negative Declaration (MND). Chambers reviewed all available project-related data presented to us by the County and ICF to determine if there was sufficient data for use to prepare the IS. The biological investigation of the project areas consisted of a literature review (including searching the latest editions of the California Natural Diversity Data Base and California Native Plant Society Electronic Inventory) and a reconnaissance-level site visit. A cultural resources records search was preformed with the South Central Coastal Archaeological Information Center located at the University of California, Riverside to determine the extent and results of previous cultural resources studies that have been conducted in and near the project area. A site visit conducted by a qualified archaeologist. An air and noise study was completed. A response to all written and oral comments received on the Draft IS/MND was prepared according to City Staff direction.

Rancho Las Flores Natural and Cultural Resources Management Plan, Hesperia, San Bernardino County – Rancho Las Flores, LLC. Chambers Group biologists conducted reconnaissance surveys, suitability evaluations, and focused surveys for special-status species. A Habitat Suitablility Evaluation (HSE) was conducted for southwestern willow flycatcher, least Bell's vireo, burrowing owl, California red-legged frog, Mohave ground squirrel, long-eared owl, bald eagle, prairie falcon, and two-striped garter snake. The HSE was necessary to identify, in specific detail, the portions of the total project site that should be subject to focused (protocol-level) surveys. The HSE identified what portions of the 641 acres of riparian habitat on the site will be subject to focused

Relevant Experience (Continued)

surveys for least Bell's vireo and southwestern willow flycatcher. The condition of the existing riparian habitat (i.e. amount of suitable understory vegetation) was evaluated to determine the specific areas where focused surveys are warranted; and identified what portions of the 771 acres of grassland habitat will be subject of focused surveys for burrowing owl. It also identified what portions of the entire site will be subject to focused sensitive plant surveys. The HSE utilized the updated vegetation community map (Chambers Group, 2004) to identify general habitat distribution on the site. The focused survey areas were plotted onto sensitive resource maps to be used in the field. Focused surveys were performed in 2005.

MSHCP Habitat Assessment, 4.04-Acre Site, Murietta, Riverside County – Angel Rodriguez. Chambers Group conducted a Multiple Species Habitat Conservation Plan (MSHCP) habitat assessment for burrowing owl 4.04-acre site according to Riverside County guidelines. A report was prepared based on these findings and submitted to the County.

Biological Resources Surveys, Lancaster, Los Angeles County – Nancy Chou. Chambers Group conducted a literature review to determine if there are any existing records of listed and/or sensitive plant and wildlife species occurring on or in the vicinity of the site. This task will included a review of the California Natural Diversity Database (CNDDB) and the California Native Plant Society's Electronic Inventory (CNPSEI) for relevant information. In addition, biological information included in reports previously prepared for this project or adjacent projects (if available) will be reviewed. After conducting the literature search, biologists familiar with the resources known or expected to occur in the project's vicinity conducted a reconnaissance-level survey of the biological resources on the site. All plant communities on the project site were be surveyed, mapped, and qualitatively described and all habitats on the site were characterized. Chambers Group biologists documented the presence of common and sensitive biological resources on the project site. Chambers Group biologists also conducted a preliminary assessment of the Project site to identify potential U.S. Army Corps of Engineers (USACE) jurisdiction pursuant to Section 404 of the Clean Water Act and California Department of Fish and Game (CDFG) jurisdiction pursuant to Section 1602 of the State of California Fish and Game Code. Suspected jurisdictional areas will be field checked for the presence of definable channels and/or wetland vegetation. Suspected USACE/CDFG jurisdictional areas were field checked for the presence of riparian vegetation, definable channels, and Ordinary High Water Marks (OHWMs). The proposed project site is potentially within the range of desert tortoise (Gopherus agassizii), burrowing owl (Athene cunicularia), and Mojave ground squirrel (Spermophilus mohavensis). All data was presented in a biological technical report.

Nesting Bird and Burrowing Owl Preconstruction Survey, Lancaster, Los Angeles County – Matthews Homes. Conducted a Nesting Bird Survey for two 10-acre sites. The objective of the surveys was to identify any nesting birds in the site at a maximum of 30 days prior to ground disturbing activities throughout the project site utilizing approximately 30- or 100-foot belt transects, depending on the density of vegetation, in order to maintain 100 percent coverage, which is

Education

B.S. Biology, California State University, Fullerton; 2006

Emphasis in Biodiversity, Ecology, and Conservation

Memberships

Desert Tortoise Council

Defenders of Wildlife

The Society for Conservation Biology

Specialized Training, Certifications

Surveying, Monitoring, and Handling Techniques Workshop, Desert Tortoise Council, 2006

BLM Flat-tailed Horned Lizard Training, May 2007

Intro to Birding Workshop – Sea and Sage Audubon Society, 2006

Scientific Collector's Permit # 009105, California Department of Fish and Game

Permit to take, possess, and transport Flat-tailed Horned Lizards as a biological monitor and during surveys for public agencies, California Department of Fish and Game

Relevant Experience (Continued)

required by the Department of Fish and Game. Any active and inactive nests on site as well as within the 150 foot buffer were recorded on data sheets.

Regulatory Agency Coordination, Background Data Review, Biological Reconnaissance, Protocol surveys for Mohave Ground Squirrel, Burrowing Owl, and Desert Tortoise, Rosamond, Kern County – Capital Pacific Homes Inc. Conducted a focused survey for the desert tortoise. Transects were walked by foot in order to cover 100% of the project site. Conducted transects for the zone of influence (ZOI) at 100, 300, 600, 1200, and 2400ft. Desert tortoise or desert tortoise sign were not detected on site or in the ZOI.

MSHCP Habitat Assessment, Normandale Holdings, Sun City, Riverside County – Jack Van Norman. Chambers Group, Inc., was retained by Normandale Holdings, Ltd. to conduct a habitat assessment for burrowing owl (Athene cunicularia), Stephen's kangaroo rat (Dipodomys stephensi), and six narrow endemic plant species: Munz's onion (Allium munzii), San Diego ambrosia (Ambrosia pumila), many-stemmed dudleya (Dudleya multicaulis), spreading navarretia (Navarretia fossalis), California Orcutt grass (Orcuttia californica), and Wright's trichocoronis (Trichocoronis wrightii var. wrightii) on September 20, 2005. Chambers Group biologists also assessed the site for vernal pools and potential jurisdictional waters. In addition, botanists conducted focused surveys for San Diego ambrosia and Many-stemmed dudleya on April 16, 2007. An Urban/Wildlands Interface Guidelines (UWIG) analysis was performed to address indirect effects associated with locating development in proximity to a Multiple Species Habitat Conservation Plan (MSHCP) Conservation Area. Sources of edge effects analyzed in the UWIG analysis include runoff from the project site into the Conservation Area, potential for generation of toxics and potential for night lights adversely affecting wildlife with the Conservation Area, potential for noise generation from proposed land use within the project site, potential for invasive plant species from proposed project site landscaping, incorporation of barriers to minimize unauthorized public access, domestic animal predation, illegal trespass or dumping in the Conservation Area, and manufactured slopes from proposed development extending into the Conservation Area. The purpose of the report was to document the results of the habitat assessment, sensitive habitat evaluation, and focused surveys and was written in accordance with MSHCP guidelines (Riverside County, 2007).

Burrowing Owl Survey, Redlands, San Bernardino County – Brentwood Communities. Chambers Group biologists conducted a focused survey for burrowing owl throughout the project site and within a 150-meter buffer around the site, utilizing approximately 30- or 100-foot belt transects. The results of this survey are valid for a maximum of 30 days from the last active day of the focused survey (August 2, 2007) according to the California Department of Fish and Game (CDFG). No burrowing owl and/or burrows or sign were observed on the project site. No owls were observed in the adjacent buffer zone during the focused survey. After completing the field surveys, methodology and findings were summarized and incorporated into a memo report.

Relevant Experience (Continued)

Phase II Burrowing Owl Survey, Riverside, Riverside County – LA-Magnolia Spectrum, LLC. Conducted a focused Phase II Burrowing owl survey on a 16-acre parcel according to The Burrowing Owl Consortium guidelines (1993). Assisted with the preparation of the biological technical report in order to document the results of the survey.

Burrowing Owl Pre-Construction Survey, 66-Acre Granite Homes Site, Redlands, San Bernardino County – Granite Homes. Walked transects according to The Burrowing Owl Consortium guidelines (1993), on appropriate habitat in search for the presence of burrowing owls or any sign of burrowing owls on the 66 acre site prior to grading for the development of homes. No burrowing owls were found and a letter report was written to document the survey.

Matthews Homes Development Properties, City of Victorville, Los Angeles County, California. Conducted presence/absence survey for the desert tortoise *(Gopherus agassizii)* on the project site as well as a zone of influence survey. No desert tortoise or desert tortoise sign was detected on the project site or in the vicinity of the project site.

Matthews Homes Development Properties, City of Victorville, Los Angeles County, California. Conducted a Phase II burrowing owl survey on the project site located on Bear Valley Road just east of Highway 395. A burrowing owl was detected on site and was re-located following the protocol by the California Department of Fish and Game. Conducted construction monitoring for the site in order to prevent "take" of the burrowing owl and/or the Mojave ground squirrel as well as to be sure all other BMPs were taking place.

Tracy Development Project, City of Etiwanda, San Bernardino County, California. Conducted a Phase II burrowing owl survey on 107 acres and within a 150 ft buffer around the project site. Transects varied, because of topography differences, in order to cover 100% of the site. Burrowing owl sign was detected, however, sign was determined to be old and no burrowing owls were detected on site.

Normandale Holdings Project, City of Sun City, Riverside County, California. Conducted a Phase II burrowing owl survey following the burrowing owl survey instructions for the Western Riverside County Multiple Species Habitat Conservation Plan Area. No burrowing owls or burrowing owl sign was detected. Because of the proximity of the project site to MSHCP conservation areas, a Urban/Wildlands Interface Analysis was included in the report of the survey results and followed guidelines by the MSHCP.

Capital Pacific Homes Project, City of Rosamond, Kern County, California. Conducted a Phase II/Phase III burrowing owl survey on approximately 88 acres and within the 250ft. buffer. Upon detection of a burrowing owl and an active burrowing owl burrow on the first day, a Phase III survey was continued for the following three days. All behavior, foraging areas, and territorial boundaries were noted. The burrow was found to be occupied by a breeding pair of burrowing owls.

Relevant Experience (Continued)

PSOMAS Street Widening Project, Moreno Valley, Riverside County, California. Conducted a habitat assessment for the burrowing owl. Suitable burrowing owl habitat exists on the project site; therefore, a Focused Burrow Survey and Pre-Construction Burrowing Owl Survey will be required. Conducted a Focused Burrow Survey during the breeding season for the burrowing owl covering 100% of the project site including a 150-meter buffer around the site according to guidelines set by the MSHCP. Wrote the report of findings of the Focused Burrow Survey.

Brentwood Communities in the City of Redlands, San Bernardino County, California. Conducted a pre-construction survey for the Burrowing Owl (*Athene cunicularia*) on the project site (tract 17962) located on the northwest corner of Nevada St. and Orange Ave. No burrowing owl or sign was detected on the site. Wrote a memo report of the findings.

Burrowing Owl Habitat Assessment and Focused Burrow Survey, Lurin Avenue Preschool Development Site, Riverside, Riverside County – KoriLain, LLC. Due to the presence of suitable burrowing owl habitat, i.e. ruderal vegetation, a field survey was conducted during the non-breeding season to determine the presence of burrowing owl within 100 percent of suitable habitat onsite, and within a 150-meter buffer around the project site, utilizing approximately 30 meter parallel pedestrian belt transects in ruderal areas according to protocol approved by the California Department of Fish and Game (CDFG) (Burrowing Owl Consortium 1993) and modifications to said protocol by RCIP (2006). No burrowing owls or burrowing owl sign were observed/detected during the survey.

Santa Ana Sucker Monitoring, San Gabriel River Sediment Management Plan, Biological Surveys & Monitoring, Azusa, Los Angeles County – Los Angeles County Department of Public Works. Helped re-locate thirty Santa Ana sucker fish under permitted biologists. Assisted with the collection and relocation of two species of fish; the Santa Ana Sucker (*Catosomus santaanae*) and the Santa Ana Speckled Dace (*Rhinichthys osculus*) in 2006. Fish were collected using an electro fisher, seine nets, and dip nets. The fish were identified, measured, counted, and released upstream in the river at the completion of the survey. Activities were in support of the 2006 sediment removal activities at the San Gabriel Reservoir. The Santa Ana Sucker fish were caught/discovered in the stream system during fish surveys conducted by Chambers Group biologists. Due to the low quality habitat conditions and the chance of water drying up where the fish were found, it was decided to move the fish upstream to better conditions. Conducted pre-construction surveys for nesting birds and any wildlife within the stream before the diversion took place. Any frogs, toads, snakes were re-located upstream where they would not be harmed due to construction activities. Conducted construction monitoring during stream diversions and sediment removal in the reservoir.

San Dimas Reservoir Cleanout Project, San Dimas, Los Angeles County – LADPW, Programs Development Division. Helped re-locate thirty Santa Ana sucker fish under permitted biologists, John O'Brian and Paul Morrissey, following approval by agencies. The Santa Ana Sucker fish were

Relevant Experience (Continued)

caught/discovered in the stream system during fish surveys conducted by Chambers Group biologists. Due to the low quality habitat conditions and the chance of water drying up where the fish were found, it was decided to move the fish upstream to better conditions. Conducted pre-construction surveys for nesting birds and any wildlife within the stream before the diversion took place. Any frogs, toads, snakes were re-located upstream where they would not be harmed due to construction activities. Conducted construction monitoring during stream diversions and sediment removal in the reservoir. Conducted construction monitoring during stream diversions and sediment removal in the reservoir. Conducted vegetation mapping, focused plant surveys, amphibian, reptile, fish, avian, and mammal surveys, stream assessments and macroinvertebrate collections onsite and within the project vicinity. During wildlife surveys, a federally threatened species was found onsite. Through careful coordination with CDFG, USFWS, and USFS, Chambers submitted a biological assessment of potential project impacts on the species, and received an informal consultation letter to proceed with the schedule over a span of 48 hours. Conducted pre-construction surveys for nesting birds and any wildlife within the stream before the diversion took place. Any frogs, toads, snakes were re-located upstream where they would not be harmed due to construction activities.

Barstow Desert Tortoise Surveys, Cellular Tower Project, Barstow, San Bernardino County – Terracon. Chambers Group conducted a literature review to determine if there were any existing records of listed and/or sensitive plant and wildlife species occurring on or in the vicinity of the site. Chambers Group conducted a presence/absence survey on the site for the federal- and state-listed threatened desert tortoise (Gopherus agassizii) in accordance with protocol set-forth by the U.S. Fish and Wildlife Service (USFWS, 1992). The survey was conducted on foot over all areas of suitable habitat utilizing 30-foot belt transects to provide 100 percent coverage. A Zone of Influence (ZOI) survey was conducted in the areas directly adjacent to and surrounding the project site where suitable desert tortoise habitat existed and in which tortoises may directly or indirectly be affected by project operations. The ZOI survey will be conducted within a buffer of 100, 300, 600, 1,200, and 2,400 feet parallel to the edge of the project boundaries in accordance with USFWS protocol. Sign of desert tortoises including live tortoises, shell, bones, scutes, limbs, scat, burrows, pallets, tracks, egg shell fragments, courtship rings, drinking sites, and mineral licks were recorded. After completing the field surveys, findings were summarized in a letter report.

Environmental Assessment/Initial Study/Mitigated Negative Declaration, Fiber Optic Cable Installation, Victorville, CA to Las Vegas, NV, San Bernardino and Clark County – AT&T, sub to Forkert Engineering & Surveying, Inc. The project involves permitting applications (Section 7, Section 404, 401, 1600 and WDR), conducting general and focused biological surveys, construction monitoring, GIS mapping and jurisdictional delineations along the linear project area. Conducted general biological reconnaissance surveys to: map the vegetation communities; document the existing biological resources and; assess the habitat's potential to support sensitive plant and wildlife species. Identified and delineated areas of the project site that fell under the regulatory

Relevant Experience (Continued)

jurisdiction of the USACE pursuant to Section 404/401 of the Federal Clean Water Act, CDFG jurisdiction pursuant to Section 1602. Permit applications for State Water Resources Control Board (SWRCB - 401) and WDR, USACE (404) and CDFG (1600) were submitted for project approval. Conducted presence/absence surveys for the federal- and state-listed threatened desert tortoise (Gopherus agassizii) in accordance with protocol set-forth by the U.S. Fish and Wildlife Service (USFWS, 1992). Sign of desert tortoises including live tortoises, shell, bones, scutes, limbs, scat, burrows, pallets, tracks, egg shell fragments, courtship rings, drinking sites, and mineral licks were recorded. Coordinated with CDFG to identify mitigation measures and monitoring requirements for the desert tortoise and other sensitive species based on the Biological Evaluation in order to streamline the Consistency Determination process.

AT&T Fiber Optic Cable – Las Vegas to Victorville Project, Multiple County – AT&T, sub to Forkert Engineering & Surveying, Inc. Chambers Group conducted general biological reconnaissance surveys to: map the vegetation communities; document the existing biological resources; and assess the habitat's potential to support sensitive plant and wildlife species. Coordinated with BLM to prepared and compose a Noxious Weed Management Plan and a Habitat Restoration Plan. Provided construction monitoring in accordance with project permits for the protection of the desert tortoise. Prepared post-construction desert tortoise monitoring and environmental compliance reports. Provided environmental awareness training for all individuals involved with the project. Conducted jurisdictional delineations fro California Department of Fish and Game along the linear fiber optic line for AT&T.

Jurisdictional Delineation, Construction Monitoring, AT&T Fiber Optic Line from the City of Victorville, California to the City of Primm, Nevada. Conducted presence/absence surveys for the desert tortoise along the linear fiber optic line for AT&T. Presence/absence surveys were conducted in California from Stoddard Wells Rd. in Victorville to Slash X Ranch, from Halloran Summti Rd. to Cima Rd. in Baker, and From Nipton Rd, to State Line (Primm, Nevada). Surveyed the project area and the 100 ft. and 300 ft. ZOI transect lines. Tortoise burrows, scat, and a scute were observed in various places along the route. Surveys followed protocol set out by USFWS. Detailed notes and GPS points were recorded when any desert tortoise sign was observed or detected. Conducted construction monitoring as the assistant lead on the project from Los Vegas, Nevada to Primm, Nevada and in California from Primm, Nevada to Nipton Rd. and from Cima Rd. to Halloran Summit Rd. Monitoring included trenching, pipe installation, backfilling, restoration, compaction, vault installation, proofing, cable pulling, splicing, and post installation/replacement. Eighteen tortoises were found along the project site in Nevada and only three had to be handled, in order to be moved away from the approaching construction equipment. One tortoise was found in California between Primm and Nipton Rd., this tortoise was not handled. No tortoises were harmed as a result of any of the project activities in California or Nevada.

Construction Monitoring, Arroyo Trabuco Creek Railroad Bridge Replacement, San Juan Capistrano, Orange County – Southern California

Relevant Experience (Continued)

Regional Rail Authority. Monitored compliance of activities with the 1600 Streambed Alteration Agreement during the replacement of the railroad bridge above Arroyo Trabuco Creek. Conducted preconstruction surveys for nesting birds and bats. Monitored vegetation removal and protection of the creek during construction.

MSHCP Habitat Assessment, Focused Plant Surveys, Day Street Extension, Moreno Valley, Riverside County – City of Moreno Valley, sub to AEI-CASC Engineering. Walked pedestrian transects according to the Burrowing Owl Consortium guidelines (1993). Covered 100% of the project sites as well as a 150 meter buffer. Any burrowing owls or sign (white wash, pellets, etc.) were recorded on standardized data sheets. No burrowing owls or burrowing owl sign were observed or detected. Conducted a focused plant survey for the potential of the occurrence of three state- or federally-listed threatened or endangered plant species, Munz's onion (*Allium munzii*), San Jacinto Valley crownscale (*Atriplex coronata* var. *notatior*), and thread-leaved brodiaea (*Brodiaea filifolia*), on the project site. Covered 100% of the project sites as well as a 150-meter buffer around the project sites boundaries.

Habitat Assessment, Oakmont Ramona Expressway Project, Perris, Riverside County – Golder Associates. Conducted a habitat assessment on old agricultural fields with ruderal, a small strip of riparian vegetation, and tiny section of ornamental landscaping. Burrowing owl sign was detected on site during the habitat assessment, therefore, a focused burrow survey during non-breeding season was conducted. No burrowing owls were observed, but a focused burrow survey will be required by WR-MSHCP during breeding season in order to avoid take of the species. Wrote the report documenting the findings of the assessment and focused burrow survey.

Least Bells' Vireo and Southwestern Willow Flycatcher Biological Surveys, SR-60 and Grand Avenue Interchange Improvement Project, Diamond Bar, Los Angeles County – EIP Associates, a Division of PBS&J, sub to Sage Environmental Group. Chambers Group biologists conducted presence/absence focused surveys for southwestern willow flycatcher and least Bell's vireo at a section of Diamond Bar Creek known as Brea Wash and three tributaries that flow into the wash from under the freeway. All potential habitats within the project site were surveyed and nesting status of each pair was documented. Maps included project location and observed species locations and individual nest sites where found.

Habitat Assessment, Lasselle Street Widening from John F. Kennedy Drive to Alessandro Boulevard, Moreno Valley, Riverside County – City of Moreno Valley, sub to PSOMAS. Conducted a habitat assessment from John F. Kennedy Dr. to just past Alessandro Blvd. along Lasselle St for the burrowing owl. Habitat suitable for the burrowing owl was present on the project site, thus a Focus Burrow Survey for the burrowing owl will be required according to the western Riverside MSHCP. Co-authored the biological report documenting the findings of the habitat assessment. A Focused Burrow Survey was conducted during the breeding season for the burrowing owl. Wrote the report of findings of the Focused Burrow Survey.

Relevant Experience (Continued)

Biological and Cultural Resources Surveys, Jurisdictional Delineations, Pre-Construction and Construction Monitoring, Track Upgrade Project, Thermal, CA to Yuma, AZ, San Bernardino and Imperial County – Union Pacific Railroad, Yuma Subdivision, sub to Parsons Water & Infrastructure. Conducted a focused survey for the desert tortoise, covering 100% of the project site for 43 miles from mile post 679 to mile post 722, in 2007. In 2008, presence/absence surveys were extended from mile post 722 to 725..8, which occurred on the Quechan Indian Reservation. Surveys were conducted following Fish and Wildlife Service protocols of 1992. Old desert tortoise burrows and possible old scat were detected on site. GPS locations, photos, and detailed notes were taken upon detection of all sign. No desert tortoise or desert tortoise carcasses were detected on site. Also, conducted the pre-construction surveys, clearance surveys and monitoring for the desert tortoise. Assisted with focused surveys for Peirson's milk-vetch and Algodones Dunes sunflower and other rare species with a potential to occur on the project site. During surveys conducted in 2008, one sensitive plant species, Harwood's milk-vetch, was detected within the project site during the Chambers Group focused plant survey. This CNPS list 2.2 species is an annual herb that occurs in dune and Mojave Desert scrub habitats at elevations up to 3,330 feet amsl. The flowering period for this species is between January and May. This species was observed at 19 locations between MP 722.38 and 723.77 with a total of 182 individuals present in this area. A map of populations and the GPS data for each location were mapped.

Habitat Assessment, Wetland Delineation and Jurisdictional Determination, Kitching Street Improvements Project, Moreno Valley, Riverside County – City of Moreno Valley, sub to Proactive Engineering Consultants, Inc. Habitat for the burrowing owl does exist on the project site; therefore, according to the Burrowing Owl Survey Instructions for the Western Riverside County MSHCP, a Focused Burrow Survey will be required as well as a pre-construction survey within 30 days prior to ground disturbance to avoid direct take of burrowing owls (TLMA 2006). Wrote the report documenting the findings of the survey. Assisted with the wetland delineation in the drainage ditch on the southeast corner of Kitching St. and Alessandro Blvd. Results indicated that the drainage is a wetland and that the waters are jurisdictional due to the fact that they flow into the San Jacinto River, which flows into Canyon Lake.

Habitat Assessment, Biological and Regulatory Permitting Services for Reclaimed Water System Pipeline, Norco, Riverside County – City of Norco, sub to RGP Planning & Development Services. Conducted a survey for habitat potentially suitable for burrowing owl (*Athene cunicularia*) and Narrow Endemic Plant Species. Habitat suitable for the burrowing owl was present on a portion of the project site and so a Focus Burrowing Owl survey was recommended. Co-authored the biological report documenting the findings of the focused surveys.

Desert Tortoise Clearance Surveys, Palmdale Water Reclamation Plant Stage 5 Effluent Management Facilities, Palmdale, Los Angeles County – Los Angeles County Sanitation District. The Palmdale Water Reclamation Plant Stage Five Effluent Management Facilities project involves construction of storage reservoirs. As part of USFWS approval, the Districts have committed to

Relevant Experience (Continued)

install a fence around the storage reservoirs to keep tortoises out. Clearance surveys will be performed within the area upon completion of the fence to ensure desert tortoises have not been trapped inside the fenced area. This desert tortoise clearance survey within the fenced area will follow the appropriate USFWS protocol.

Biological and Cultural Resources Surveys, Jurisdictional Delineations, Pre-Construction and Construction Monitoring, Track Upgrade Project, Thermal, CA to Yuma, AZ, San Bernardino and Imperial County – Union Pacific Railroad, Yuma Subdivision, sub to Parsons Water & Infrastructure. Associate Biologist. Performed the reconnaissance surveys. The project involved conducting biological surveys, vegetation mapping and wetland delineations along 100-mile-long corridor. The field survey focused primarily on determining the potential habitat for federal- and state-listed plant and wildlife species. Conducted focused plant surveys for the Algodones Dunes sunflower (*Helianthus niveus ssp. tephrodes*) and Peirson's milkvetch (*Astragalus magdalenae var. peirsonii*) covering 100%of the project site for 17 miles form mile post 698 to mile post 715. No plants were found on site at the time of the survey. Conducted presence/absent surveys for the desert tortoise, following the protocol set out by the USFWS. I conducted focused surveys for burrowing owl. When an active burrow was located in the footprint of the project construction, I and another Chamber's Group biologist, placed one way doors and collapsed the burrow when we new the owl was no longer inside (Burrowing Owl Consortium 1993). Chambers Group biologists conducted focused surveys for the following five wildlife species during months of activity; desert pupfish, California black rail, Yuma clapper rail, least Bell's vireo, and southwestern willow flycatcher. I conducted pre-construction surveys and performed construction monitoring for the desert tortoise.

Construction Monitoring, Water Reclamation Project in Palmdale, Los Angeles, California - Los Angeles Sanitation District. Monitored all construction activities which included; the installation of a pipeline, vaults, pump station, and reservoirs. No tortoises were detected/observed on the project site; however, old desert tortoise burrows without recent sign were observed. I wrote daily monitoring reports of each day's activities and findings.

JENNY MCGEE

Staff Biologist/ Botanist

Ms. McGee has a strong background in natural resource management with five years of experience working in central and southern California as well as northwestern Nevada. Her project management experience includes functioning as project manager and lead biologist responsible for drafting and implementing restoration and management plans. She specializes in invasive species management, success monitoring of sensitive plant species and communities, focused plant and reconnaissance surveys, vegetation community mapping, annual success monitoring, compensatory mitigation negotiation, agency coordination, habitat restoration implementation, and native plant propagation. As project manager, Ms. McGee managed project teams and schedules and maintained budgets and contracts. She has been central to accomplishing project goals through working closely with native landscaping, nursery, and native seed collection contractors, establishing contacts, maintaining communications, and providing QA/QC. Ms. McGee has experience coordinating across disciplines with various regional, state, and federal agencies; schools; special interest; and community groups. Her experience also includes designing erosion control retrofits, water quality monitoring, permit compliance, construction monitoring, and the preparation and technical review of restoration plans and various other technical reports.

Key Strengths

- Compensatory Mitigation Negotiation
- Habitat Restoration Plans
- Botanical Surveys
- Agency Coordination
- Permit Compliance
- Managed projects related to restoration, restoration monitoring, and botanical surveys
- Habitat Assessments
- Erosion Control Retrofits and Inspection

Relevant Experience

Biological Surveys & Monitoring, East Fork Bridge Seismic Retrofit, Azusa, Los Angeles County – Los Angeles County Department of Public Works. Staff Biologist/ Botanist. Conducted literature review and general reconnaissance survey, completed vegetation classifications and mapping and prepared Biological Assessment / Biological Evaluation Report. Survey findings determined the existence of designated critical habitat and presence of federally–endangered Santa Ana Sucker as well as California Species of Concern speckled dace, and the arroyo chub within the project boundary.

Biological Reconnaissance Surveys, Sawpit Dam, Morris Dam, San Dimas Spreading Grounds, San Gabriel River, and San Gabriel Bypass Road, Los Angeles County – Los Angeles County Department of Public Works. Staff Biologist / Botanist. The project involved biological reconnaissance surveys for various sites damaged by flood waters. Identified and mapped vegetation communities, conducted CNPS rapid assessment surveys to evaluate streamside conditions and pre- and post- dewatering of the dam, conducted vegetation mapping and community classification, conducted focused plant surveys, and performed functional anaylsis surveys to assess habitat function and value. Assisted in conducting avian point count surveys and fish surveys.

San Dimas Reservoir Cleanout Project, San Dimas, Los Angeles County – LADPW, Programs Development Division. Staff Biologist/ Botanist. Conducted CNPS rapid assessment surveys, vegetation mapping and focused plant surveys for the San Gabriel bedstraw, San Gabriel Mountains dudleya, Nevin's barberry and Plummer's mariposa lily. to evaluate streamside conditions pre and post de-watering of the dam.

Relevant Experience (Continued)

Education

B.A., Environmental Studies, UC Santa Cruz, California; 2001

Registration

California Department of Fish and Game, Scientific Collector's Permit # SC-10194

Memberships

Society of Ecological Restoration, California, member, current

California Invasive Plant Council, member, current

Southern California Botanists, member, current

Trainings and Certifications

Rancho Santa Ana Botanic Garden, Native Grasses of California

Wetland Training Institute, USACE permits

Project Management training

Leadership Training

First Aid/ CPR

Biological Surveys and Monitoring, Big Dalton Dam Sediment Removal, Glendora, Los Angeles County – Los Angeles County Department of Public Works, Water Resources Division. Staff Biologist/ Botanist. Conducted vegetation mapping and assessments to evaluate project impacts, pre- and post-dewatering. Surveys conducted included vegetation mapping, plant assessments using the CNPS Rapid Assessment Protocol, focused plant surveys, amphibian, reptile, fish, avian, and mammal tracking surveys, stream assessments and macroinvertebrate collections from above the reservoir to 2 miles downstream of the Big Dalton Dam. In addition, coast range newts were identified on site, and a Newt Monitoring and Relocation Plan was developed and approved by CDFG. Biological monitoring and newt relocation during construction activities took place daily over a period of 5 months. Data and analysis of the project is provided in the Pre- and Post-Dewatering Biological Technical Report for the Big Dalton Dam Reservoir Cleanout Project.

Functional Analysis and Focused Biological Surveys, San Gabriel River Sediment Management Plan, Azusa, Los Angeles County -- Los Angeles County Department of Public Works. Staff Biologist/Botanist. Conducted vegetation mapping and functional analysis surveys. A functional analysis methodology was formulated based on the USACE of Engineer's Hydro Geomorphic Analysis and Habitat Evaluation Procedures to assess and compare the biological resources of the two sites. Data related to the biological, physical, and biogeochemical functions at each site were collected on transects in upland, riparian, and aquatic habitats to complete the functional analysis. Geographic Information System mapping techniques were used to create vegetation maps for use in the functional analysis. A biological resources assessment report was written which included the methodology used for field survey and functional analysis techniques, a discussion of existing conditions at both sites, and the functional analysis comparing the sites.

Natural and Cultural Resources Management Plan, Rancho Las Flores Development, Hesperia, San Bernardino County – Rancho Las Flores, LLC. Staff Botanist. Conducted a focused plant survey in the entire project area on portions of the 9,867-acre site for the presence/absence of Santa Ana River woollystar, slender-horned spineflower, Nevin's barberry, Parish's checkerbloom, Parry's spineflower, Plummer's mariposa lily, and other sensitive plant species in order to update the biological resources studies for the project site.

Biological Surveys Including Focused Plant Surveys for Hampton Heights Development Project, San Bernardino County – House Land Development Co. Staff Botanist. Identified and mapped the vegetation communities, documented the existing biological resources and assessed the habitat for its potential to support sensitive plant and wildlife species on the parcel located near the city of Yucaipa, California. Conducted focused plant surveys for sensitive plant species over the 463-acre project site.

Aerial mapping and Survey of Endangered Plant Population – Santa Barbara County. Lead Botanist. Chambers Group was retained to advise this client in the resolution of land use challenges relevant to managing protection of a with oil and gas exploration on private land. The federally-listed endangered and state-listed rare plant species is encroaching into operational areas generating a unique challenge to the property owner. Chambers Group

Relevant Experience (Continued)

conducted a comprehensive field survey mapping the distribution of the protected plant species population throughout the 2,000 acre property. Following the survey, Chambers Group facilitated discussions with the U.S. Fish and Wildlife Service and the California Department of Fish and Game and obtained authorization for the client to conduct limited maintenance activities in specified facility locations to control encroachment of the sensitive plant species.

Environmental Assessment, International Border Fuel Break Project, Tecate, San Diego County – BLM: Palm Springs-South Coast Field Office, sub to Labat Environmental, Inc. Staff Biologist. Conducted literature review, biological reconnaissance survey, vegetation community map, and assisted in preparation of Environmental Assessment report. The project area consists of 639 acres of BLM-managed lands within the International Border Fuel Break project site between Otay Mountain and the community of Campo, located east and west of the City of Tecate, east of State Highway 805 and south of State Highway 94 in San Diego County, California. The project has 5 segments, covers 35 total miles and includes habitat for several sensitive species, such as Quino checkerspot butterfly, California gnatcatcher, Tecate cypress, least Bell's vireo, and arroyo toad. Overall habitat was evaluated, flora and fauna species observed or detected were recorded and vegetation community associations were mapped on aerial photographs and transferred into a GIS graphic image.

Environmental Assessment of Monument Fuels Management Project, Pinyon and Snow Creek, Palm Desert, Riverside County – Bureau of Land Management, Palm Springs-South Coast Field Office, sub to Labat Environmental. Staff Biologist and Botanist. This project was located in the Santa Rosa and San Jacinto Mountains National Monument Management Plan area on BLM-managed public lands, USFS-managed lands. Conducted literature review, general reconnaissance survey and prepared vegetation community classification/ distribution map. Preparation of Environmental Assessment Report including recommendations for avoidance and minimization strategies for sensitive species identified within the project boundary. The project area intersects habitat for Pennisular bighorn sheep, desert tortoise, grey vireo, and triple-ribbed milk-vetch.

Clearance Surveys, Restoration Planning and Implementation, Biological Monitoring, Marblehead Coastal Project, SunCal Properties, San Clemente. Project Manager and Project Biologist. Project included restoration of coastal habitats on master planned commercial and residential development. Directed and conducted 34 acres of habitat restoration. Conducted plant health assessments, annual performance monitoring and associated reporting. Provided oversight for all restoration activities, and completed a constraints analysis to avoid impacts to the Blochman's dudleya, Coastal Bluff Scrub and California Needlegrass Grassland habitats on site. Directed and conducted the collection of baseline vegetation data and annual performance monitoring of vegetation communities that have become rare along the coast.

MAYA MAZON

Assistant Biologist

Ms. Mazon recently led a field team to survey post-fire areas in San Diego County. This required a working knowledge of San Diego flora and the ability to work in harsh conditions. As the crew leader, she had to be organized, learn quickly, and be able to communicate and work with the field team effectively. In addition, Ms. Mazon has 4 years experience in plant physiological ecology research. She is confident with her skills in the following relevant areas: plant identification (esp. San Diego and Orange County); plant propagation; GPS technology; insect trapping, identification and preservation; and small mammal trapping. She is also very familiar with ArcGIS and the acquisition of primary scientific literature for presenting research findings in oral and poster presentations and technical reports.

Key Strengths

Biological Resource Surveys

Southern California Native Plant Identification

Plant Physiological Ecology

Field Crew Supervision

Expert Use of GPS Technology/Software

Specialized Training

Quino Checkerspot Butterfly Service-approved practical exam (Pass) – Carlsbad, California, 2009

Field Botany and Plant Taxonomy Coursework, CSUF 2001-2005

Relevant Experience

United States Geological Survey, San Diego, San Diego County. California. Field Crew Lead/Technician /Botanist. Led a team that conducted vegetation surveys to determine post-fire recovery of native flora. Surveys were conducted at 6 different sites containing numerous plots per site where 100 percent coverage was attained . Sites included areas with rare plants such as the Tecate cypress (*Cupressus forbesii*) and the chocolate lily (*Fritillaria affinis*). Plant density and fire severity measurements were taken. A complete plant species inventory was created, which totaled more than 350 species. Duties also included the teaching plant identification of San Diego flora to on-site team members and identifying unknown plant species using vegetative keys. In addition, complete species composition and vegetation community typing was conducted at separate herpetological and entomological post-fire recovery project sites. These surveys were conducted at 5 different sites with multiple plots per site.

United States Geological Survey, Sequoia and Kings Canyon Office. Field Crew Leader. Led a team conducting vegetation surveys in San Diego County for post-fire recovery of native flora. Coordinated orders remotely between the USGS office and field crew. Completed administrative tasks (i.e., tracked and completed crew's timesheets, booked camping accommodations, tracked finances, etc.). Collected and digitized data in Microsoft Access. Scouted and established new sites for future surveys.

Functional Analysis Comparison Along the San Gabriel River, Los Angeles County -- LACDPW. Assistant Biologist. Collected data for a complete functional analysis, based on the USACE Hydrogeomorphic Analysis and Habitat Evaluation Procedures. The functional analysis was conducted to assess and compare the biological resources along the length of the San Gabriel River, from the West Fork downstream to the Santa Fe Reservoir Spreading Grounds. Data related to the biological and physical function were collected at each permanent data collection transect location in the upland and riparian habitats of the site.

Education

MS, Biology, California State University, Fullerton, exp. 2009

BS, Biology California State University, Fullerton, May 2002

Relevant Experience (Continued)

AT&T Fiber Optic Cable – Las Vegas to Victorville Project, Multiple County – AT&T, sub to Forkert Engineering & Surveying, Inc. Ms. Mazon monitored construction activites to ensure equipment was in compliance with all associated permits for the project. She performed pre-construction surveys for desert tortoise and for noxious weeds. In addition, Ms. Mazon assisted with the re-location of cacti and other succulents in accordance with the Succulent Relocation Plan for the project.

San Marcos Landfill Restoration Project, San Marcos, San Diego County – County of San Diego Department of Public Works, sub to Kleinfelder. Ms. Mazon performed annual vegetation monitoring on the 103-acre landfill. Vegetation transects were run through the landfill to assess the cover and species composition of the restored habitat. Data were analyzed to determine whether the site met the fifth year performance standards and reports were submitted.

California State University, Fullerton. Teaching Associate. Direct and instruct undergraduate non-biology college students in experiment driven environment. Created power point presentations to aid in teaching complex biological concepts. Monitor student progress and managed activities to ensure completion within time constraints. Interacted with students of diverse ethnic and socioeconomic backgrounds. Accomplishments: Introduced and implemented new department curriculum. Developed successful methods for teaching inexperienced students.

Field Assistant. Setup and baited Sherman traps for small mammals in burned and unburned areas of the Mohave Desert. Setup and collected seed trays.

Graduate Student Researcher. Investigated tree rings in a tropical tree species. Conducted stable isotope (5OIS and 8Cb) measurements of wood cellulose from a fountain grass invaded and non-invaded site to assess water source differences of a tropical tree species. Transcribed research efforts into a thesis. Researched and trouble-shot methods from different disciplines. Mentored and trained undergraduate researcher. Accomplishments: Conducted novel research on a tree species from an endangered area, the tropical dry forest. Utilized creative problem solving to successfully alter established protocols.

Field Assistant. Emergence study of native and invasive plant species in disturbed and non-disturbed biological soil crust areas in the coastal sage scrub of Limestone canyon. Scouted plot sites and setup plots. Recorded UTMs and relevant site data. Accomplishments: Advanced implementation of experiment by altering project design. Designed solutions to trouble shoot logistical problems.

APPENDIX C – WILDLIFE SPECIES OBSERVED/DETECTED ONSITE

Appendix C
Wildlife Species Observed/Detected During Habitat Assessment on the Chevron Solar Project (Lucerne Valley) Site

Scientific Name	Common Name
CLASS AVES	**BIRDS**
ODONTOPHORIDAE	**NEW WORLD QUAIL**
Callipepla californica	California quail
COLUMBIDAE	**PIGEONS & DOVES**
Columba livia	rock pigeon
Zenaida macroura	mourning dove
ALAUDIDAE	**LARKS**
Eremophila alpestris	horned lark
CORVIDAE	**JAYS & CROWS**
Corvus corax	common raven
STRUTHIONIDAE	**EMUS, KIWIS, and other RATITES**
Struthio camelus	ostrich
STURNIDAE	**STARLINGS**
Sturnus vulgaris	European starling
EMBERIZIDAE	**EMBERIZIDS**
Amphispiza bilineata	black-throated sparrow
FRINGILLIDAE	**FINCHES**
Carpodacus mexicanus	house finch
CLASS MAMMALIA	**MAMMALS**
SCIURIDAE	**SQUIRRELS**
Ammospermophilus leucurus	Antelope ground squirrel
Spermophilus tereticaudus	Round-tailed ground squirrel
LEPORIDAE	**HARES & RABBITS**
Lepus californicus	black-tailed jackrabbit
Sylvilagus audubonii	desert cottontail
CANIDAE	**WOLVES & FOXES**
Canis familiaris	domestic dog
Vulpes velox	kit fox

APPENDIX C
Wildlife Species Observed/Detected During DT/BO Surveys on the Chevron Solar Project (Lucerne Valley) Site

Scientific Name	Common Name
CLASS INSECTA	**INSECTS**
PIERIDAE	**WHITES & SULPHURS**
Pontia protodice	Common white
NYMPHALIDAE	**BRUSH-FOOTED BUTTERFLIES**
Vanessa cardui	Painted lady
SPHINGIDAE	**SPHINX MOTHS**
Hyles lineata	White-lined sphinx moth
CLASS REPTILIA	**REPTILES**
TESTUDINIDAE	**LAND TORTOISES**
Gopherus agassizii	desert tortoise
CROTOPHYTIDAE	**COLLARED AND LEOPARD LIZARDS**
Gambelia sila	blunt-nosed leopard lizard
PHRYNOSOMATIDAE	**ZEBRA-TAILED, EARLESS, FRINGE-TOED, SPINY, TREE, SIDE-BLOTCHED, AND HORNY LIZARDS**
Callisaurus draconoides draconoides	common zebra-tailed lizard
Dipsosaurus dorsalis	desert iguana
Phrynosoma platyrhinos	desert horned lizard
Uta stansburiana	common side-blotched lizard
TEIIDAE	**WHIPTAIL LIZARDS**
Cnemidophorus tigris tigris	Great Basin whiptail
VIPERIDAE	**VIPERS**
Crotalus scutulatus	Mojave green rattlesnake
Crotalus cerastes	sidewinder rattlesnake
CLASS AVES	**BIRDS**
CATHARTIDAE	**NEW WORLD VULTURES**
Cathartes aura	turkey vulture
ACCIPITRIDAE	**HAWKS, KITES, EAGLES**
Buteo jamaicensis	red-tailed hawk
Circus cyaneus	Northern Harrier
FALCONIDAE	**FALCONS**
Falco mexicanus	prairie falcon
SCOLOPACIDAE	**SANDPIPERS**
COLUMBIDAE	**PIGEONS & DOVES**
Zenaida macroura	mourning dove
STRIGIDAE	**TRUE OWLS**
Asio flammeus	short-eared owl
Athene cunicularia	burrowing owl

APPENDIX C
Wildlife Species Observed/Detected During DT/BO Surveys on the Chevron Solar Project (Lucerne Valley) Site

Scientific Name	Common Name
CLASS AVES	**BIRDS**
CAPRIMULGIDAE	**NIGHTHAWKS**
Chordeiles acutipennis	lesser nighthawk
ALAUDIDAE	**LARKS**
Eremophila alpestris	horned lark
HIRUNDINIDAE	**SWALLOWS**
Petrochelidon pyrrhonota	cliff swallow
Hirundo rustica	barn swallow
CORVIDAE	**JAYS & CROWS**
Corvus corax	common raven
SYLVIIDAE	**OLD WORLD WARBLERS, GNATCATCHERS**
Polioptila melanura	black-tailed gnatcatcher
MIMIDAE	**MOCKINGBIRDS, THRASHERS**
Toxostoma lecontei	Le Conte's thrasher
EMBERIZIDAE	**EMBERIZIDS**
Amphispiza belli	sage sparrow
Amphispiza bilineata	black-throated sparrow
Zonotrichia leucophrys	white-crowned sparrow
FRINGILLIDAE	**FINCHES**
Carduelis psaltria	lesser goldfinch
Carpodacus mexicanus	house finch
CLASS MAMMALIA	**MAMMALS**
LEPORIDAE	**HARES & RABBITS**
Lepus californicus	black-tailed jackrabbit
Sylvilagus audubonii	desert cottontail
SCIURIDAE	**SQUIRRELS**
Ammospermophilus leucurus	white-tailed antelope squirrel
HETEROMYIDAE	**POCKET MICE & KANGAROO RATS**
Dipodomys sp.	kangaroo rat
CANIDAE	**WOLVES & FOXES**
Canis familiaris	domestic dog
Canis latrans	coyote
Vulpes macrotis	kit fox
Urocyon cinereoargenteus	gray fox

APPENDIX C
Wildlife Species Observed/Detected
During DT/BO Surveys on the Chevron Solar Project (Lucerne Valley) Site

Scientific Name	Common Name
CLASS MAMMALIA	**MAMMALS**
PROCYONIDAE	**RACCOONS**
Procyon lotor	raccoon
EQUIDAE	**HORSES & BURROS**
Equus caballus	horse
Equus asinus	wild burro
BOVIDAE	**BISON, GOATS & SHEEP**
Bos bovis	domestic cow
Ovis aries	domestic sheep

APPENDIX D – FIELD DATA SHEETS

Chambers Group Inc.
Desert Tortoise
PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

Tuesday

BIOLOGIST(S) S.Skidmore, P.Morrissey, R.Alvidrez, L.Wadley DAY & DATE ~~Monday~~ 3/31/09

PROJECT NAME & NUMBER Chevron Solar, 20047

City: Lucerne Valley County: San Bernardino State: Ca

Transect# —— MP to MP (mileposts): southeast portion of the site Length: —— ft. Width: 30 ft. OR ____ ft.

Project Site/ROW ☒ Zone of Influence (ZOI) ☐ ≈500 Ft. from Project ROW

Time (start): 0845 Cloud % 0 Temp: 51.4 Wind: 1.2 avg Elevation: 3209 ft.

Time (end): 1545 Cloud % 5 Temp: 80 Wind: 1.0 avg Elevation: 3223 ft.

Aspect ~~[illegible]~~ north facing slope & valley %Slope 0-20 Adjacent Land Use Scattered residential & open space

Vegetation Community Creosote- White bursage series

Soil (rock, sand, caliche etc.) sandy, gravelly Land Form(s)- mesa, bajada, wash etc. mesa/bajada w/washes

SIGNS OF HUMAN DISTURBANCE – NUMBER AND TYPES SEEN

☒ TIRE TRACKS ☒ SHOTGUN/RIFLE SHELLS ☐ BLADING ☒ RAVENS ☐ TRASH
☐ DUMP SITES ☐ HUMAN FOOTPRINTS ☐ DOG SIGN ☐ OTHER

INFORMATION ON TORTOISE SIGN

GN #	TYPE scat, bone, burrow, etc.	CLASS# For scat burrows, shell remains	W x H x L or SIZE Width x Height x Length	Burrow Direction (aspect)	Nearest Plant Species	Elev. (feet)	GPS location (NAD 83)
	4 burrows	~~0~~ 4	~~4~~ x ~~6~~x ?	W	Ambrosia dumosa	3186	0518089 3808111
	↓	5	~~9~~x~~7~~x ?	W	↓	↓	↓
2	↓	↓	8x6 x ?	W			
1	↓	↓	8x8x ?	W			
5	burrow	5	10x5x8	~~0~~ W	Ambrosia dumosa	3195	0518009 3807970
	plant	——	——	——	Winter Fat	3306	0517842 3807921
7	tracks	——	2"	——		3220	0518297 3807765
	burrow	~~1~~	12x8x ?	W	Ambrosia dumosa	↓	↓
1	Scat	2	1-~~2~~"	——			

photo #5 wash

gn #	Comments on Conditions of shelter sites (active/inactive-why?), scat, shell remains, human disturbances. (continue on page 2 if necessary)
4	burrows turn & go in Far - may be Fox photos #1-4 of burrows 1-4 from N→S
~~0~~	on the banks of a sandy wash - definitely Fox - more entrance/exits east of wash
~~3~~	- old DT, looks like the opening originally began at the ambrosia but is almost
~~4~~	completely collapsed now - photo #6
7	photo #7 & 8 - tracks - DT - Found around Lauries burrow & my sign #8
	- Scat located along tracks, tracks all around burrows ≈ 200 ft out
8	burrow looks used, tracks go into it - class 2 scat in & around - photo #9 & 10
9	scat dark brown with odor - photo #11

Page 2 of 2 (Please staple to Page 1)

Chambers Group Inc.

Desert Tortoise

PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

BIOLOGIST(S) Saraiah Skidmore DAY & DATE Tuesday 3

INFORMATION ON TORTOISE SIGN

SIGN #	TYPE scat, bone, burrow, etc.	CLASS# For scat burrows, shell remains	W x H x L or SIZE Width x Height x Length	Burrow Direction (aspect)	Nearest Plant Species	Elev. (feet)	GPS location (NAD 83)
10	burrow	1	14 x 6 x 36"	SW	Ambrosia dumosa	3222	11 S 0518383 3807733
11	tracks	—	—	—	—	↓	↓
12	burrow	1	14 x 8 x ?	W	Ambrosia dumosa	3216	0518417 3807679
13	scat	3	1-2"	—	↓	↓	↓

Sign #	Comments on Conditions of shelter sites (active/inactive-why?), scat, shell remains, human disturbances.
10	scat found by Lisa ≈ 50 ft south — photo #12 & 13 of burrow
	- burrow is at the edge of a wash - tracks in the wash
12	Followed tracks from burrow (sign #10) to here - photo #14
13	photo #15

Chambers Group Inc.
Desert Tortoise
PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

BIOLOGIST(S) S.S Kidmore, R. Alvidrez, C. Wadley, P. Morrissey, L. Gorman DAY & DATE Wednesday 4/1/09

PROJECT NAME & NUMBER Chevron Solar- 20047

City: Lucerne Valley County: San Bernardino State: Ca

Transect# 4-1 to 4-40 → ∯ → MP to MP (mileposts): southeast portion of the site Length: —— ft. Width: 30 ft. OR —— ft.

Project Site/ROW ☒ Zone of Influence (ZOI) ☐ ∯ 500 Ft. from Project ROW

Time (start): 0700 Cloud % 80 Temp: 52° Wind: 5.3 avg Elevation: 3244 ft.

Time (end): ~~0~~1600 Cloud % 2 Temp: 78° Wind: 3.5 avg Elevation: 3150 ft.

Aspect north facing slopes & valley %Slope 0-20 Adjacent Land Use open space & scattered residential

Vegetation Community Creosote-White Bursage Series

Soil (rock, sand, caliche etc.) sandy loam Land Form(s)- mesa, bajada, wash etc ~~[illegible]~~ bajada

SIGNS OF HUMAN DISTURBANCE – NUMBER AND TYPES SEEN

☒ TIRE TRACKS ☑ SHOTGUN/RIFLE SHELLS ☐ BLADING ☒ RAVENS ☐ TRASH
☐ DUMP SITES ☐ HUMAN FOOTPRINTS ☐ DOG SIGN ☐ OTHER

INFORMATION ON TORTOISE SIGN

IGN #	TYPE scat, bone, burrow, etc.	CLASS# For scat burrows, shell remains	W x H x L or SIZE Width x Height x Length	Burrow Direction (aspect)	Nearest Plant Species	Elev. (feet)	GPS location (NAD 83)
1	DT	——	7"W x 8"L	——	Ambrosia dumosa	3247	0518232 3807563
2	burrow	1		W	larrea tridentata	↓	↓
3	burrow &	——	10 x 5 x ?	NE	larrea tridentata	3123	0517042 3809018
↳	pellet & white wash		of BO	——	——	——	——
4	plant	——	——	——	Winter Fat (2 Inds.)	3137	0516450 3808964
5	pallet	5	6 x 5 x 6	N	Larrea tridentata	3128	0517174 3808928
6	owl pellets & white wash		pellets 1-2"	——	Big galleta grass	3145	0516672 3808811

ign #	Comments on Conditions of shelter sites (active/inactive-why?), scat, shell remains, human disturbances. (continue on page 2 if necessary)
3	Old fox dens - recently used by BO - pellets & white wash arand opening - also possible nighthawk pellets in same area - photos 1-3
	4 burrows next to point 4-1-2
5	possible DT pallet - most likely rabbit - photo# 4
6	possible short-eared owl - photo # 5 & 6

Chambers Group Inc.
Desert Tortoise
PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

BIOLOGIST(S) S. Skidmore, L. Wadley, R. Alvidrez, P. Morrissey, L. Gorman DAY & DATE Thursday 04/2/08

PROJECT NAME & NUMBER Chevron Solar - 20047

City: Lucerne Valley County: San Bernardino State: Ca

Transect# 4-40 to 4-64 MP to MP (mileposts): — Length: — ft. Width: 30 ft. OR — ft.

Project Site/ROW ☒ Zone of Influence (ZOI) ☐ & 500 Ft. from Project ROW

Time (start): 0730 Cloud % 0 Temp: 55 Wind: 0.5 avg Elevation: 3126 ft.

Time (end): 1500 Cloud % 0-1 Temp: 80 Wind: 10.0 avg Elevation: 3160 ft.

Aspect in a valley, south of north facing slopes %Slope 0-15 Adjacent Land Use Open Space & scattered residential

Vegetation Community white Bursage - Creosote Series

Soil (rock, sand, caliche etc.) Sandy loam Land Form(s)- mesa, bajada, wash etc. bajada

SIGNS OF HUMAN DISTURBANCE – NUMBER AND TYPES SEEN

☐ TIRE TRACKS ☒ SHOTGUN/RIFLE SHELLS ☐ BLADING ☒ RAVENS ☐ TRASH

☐ DUMP SITES ☐ HUMAN FOOTPRINTS ☐ DOG SIGN ☐ OTHER

INFORMATION ON TORTOISE SIGN

SIGN #	TYPE scat, bone, burrow, etc.	CLASS# For scat burrows, shell remains	W x H x L or SIZE Width x Height x Length	Burrow Direction (aspect)	Nearest Plant Species	Elev. (feet)	GPS location (NAD 83)
1	pallet	5	7x5x8	W	Ephedra fascicula	3145	0517087 3808744
2	plant	—	—	—	Winter Fat	3166	0516649 3808736
3	plant	—	—	—	(4 inds.)		
4	plant	—	—		Winter fat (2 inds.)	3158	0516769 3808551
					Winter fat (1 ind.)	3155	0516793 3808416
5	plant	—	—	—	Winter fat (3 inds.)	3153	0516517 3808446

Sign #	Comments on Conditions of shelter sites (active/inactive-why?), scat, shell remains, human disturbances. (continue on page 2 if necessary)
1	photo #1 — most likely jackrabbit but possibly DT due to shape
2	4 inds. w/in 100 Ft along the edge of the wash

Chambers Group Inc.
Desert Tortoise
PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

BIOLOGIST(S) S. Skidmore, R. Alvarez, L. Gorman, L. Wadley DAY & DATE Friday 4/3/09

PROJECT NAME & NUMBER Chevron Solar — 20047

City: Lucerne Valley County: San Bernardino State: Ca

Transect# 4-88 464 to MP to MP (mileposts): ——— Length: — ft. Width: 30 ft. OR — ft.

Project Site/ROW ☒ Zone of Influence (ZOI) ☐ & 500 Ft. from Project ROW

Time (start): 0715 Cloud % 0 Temp: 53° Wind: 13.2 avg Elevation: 3185 ft.

Time (end): 1030 Cloud % 0 Temp: 61.2° Wind: 18 avg Elevation: 3189 ft.

Aspect In a valley north of north facing slopes %Slope 0-15 Adjacent Land Use Open space & scattered residential

Vegetation Community White Bursage- Creosote Series ⟷ Creosote-White Bursage Series

Soil (rock, sand, caliche etc.) Sandy loam → sandy Land Form(s)- mesa, bajada, wash etc. bajada

SIGNS OF HUMAN DISTURBANCE – NUMBER AND TYPES SEEN

on dirt road just north of house

☒ TIRE TRACKS ☒ SHOTGUN/RIFLE SHELLS ☐ BLADING ☒ RAVENS ☐ TRASH

☒ DUMP SITES ☐ HUMAN FOOTPRINTS ☐ DOG SIGN ☐ OTHER

INFORMATION ON TORTOISE SIGN

IGN #	TYPE scat, bone, burrow, etc.	CLASS# For scat burrows, shell remains	W x H x L or SIZE Width x Height x Length	Burrow Direction (aspect)	Nearest Plant Species	Elev. (feet)	GPS location (NAD 83)
NO SIGN TODAY							

gn #	Comments on Conditions of shelter sites (active/inactive-why?), scat, shell remains, human disturbances. (continue on page 2 if necessary)

Chambers Group Inc.
Desert Tortoise
PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

BIOLOGIST(S) R. Alvidrez, S. Skidmore, L. Gorman, L. Walley DAY & DATE Fri 4-3-09

PROJECT NAME & NUMBER 20047 – Chevron Solar

City: Lucerne Valley County: San Bernardino Cougar buttes State: CA

Transect# 4-64 to 4-88 MP to MP (mileposts): Length: ft. Width: [✓ 30 ft.] OR ft.

Project Site/ROW ☒ Zone of Influence (ZOI) ☒ Ft. from Project ROW

Time (start): 715 Cloud % 0 Temp: 53.4 F Wind: 13.2 Elevation: 3185 ft.

Time (end): 1030 Cloud % 0 Temp: 61.2 F Wind: 18 gusts of 30 mph Elevation: 3189 ft.

Aspect %Slope 0 15 Adjacent Land Use Residential / open space

Vegetation Community white bursage / creosote

Soil [✓ rock], [✓ sand], [✓ caliche] etc.) Land Form(s)- [✓ mesa], [✓ bajada], [✓ wash] etc.

SIGNS OF HUMAN DISTURBANCE – NUMBER AND TYPES SEEN

☒ TIRE TRACKS ☒ SHOTGUN/RIFLE SHELLS ☐ BLADING ☒ RAVENS ☐ TRASH
☒ DUMP SITES ☒ HUMAN FOOTPRINTS ☒ DOG SIGN ☐ OTHER

INFORMATION ON TORTOISE SIGN

SIGN #	TYPE scat, bone, burrow, etc.	CLASS# For scat burrows, shell remains	W x H x L or SIZE Width x Height x Length	Burrow Direction (aspect)	Nearest Plant Species	Elev. (feet)	GPS location (NAD 83)
1	2	winter fat			in Ephedra ; Ambrosia	3188	11S 0517287 380836
2	1	small winter fat			Larrea tridentata	3188	11S 0517212 3808244
3	2	Winter fat			Ambrosia	3145	11S 0516861 38082
4	1	winter fat			Ambrosia dumosa	~~3149~~ 3155	11S 0516743 380
5	4	burrow	12 x 11 x 12'	SW	Larrea tridentata	3180	11S 0516792 380815

Sign #	Comments on Conditions of shelter sites (active/inactive-why?), scat, shell remains, human disturbances. (continue on page 2 if necessary)
1	2 winter fat in wash sandy/gravelly soil in Ephedra sp ; Ambrosia dumosa
2	1 small winter fat under Larrea tridentata - evidence of herbivory in sandy loamy soil (fine)
3	2 in sandy loamy wash - rocky ; 1 growing in between Ambrosia dumosa and Lycium brevipes - 1 growing in adjacent Ambrosia dumosa
4	1 winter fat just east on upland bank of wash sandy loamy and rocky on surface. - evidence of herbivory (stunted branches) adjacent to Ambrosia dumosa

Page 2 of 2 (Please staple to Page 1)

Chambers Group Inc.
Desert Tortoise
PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

BIOLOGIST(S) R. Alvidrez, S. Skidmore, L. Germano, L. Wadley **DAY & DATE** Fri - 4-3-09

INFORMATION ON TORTOISE SIGN

SIGN #	TYPE scat, bone, burrow, etc.	CLASS# For scat burrows, shell remains	W x H x L or SIZE Width x Height x Length	Burrow Direction (aspect)	Nearest Plant Species	Elev. (feet)	GPS location (NAD 83)

Sign #	Comments on Conditions of shelter sites (active/inactive-why?), scat, shell remains, human disturbances.
5	1 class 4 burrow / low quality - partially collapsed inside, slightly
	under Larrea tridentata (some white wash) but no sign of pellets.
	scat. - could be used by BO

Chambers Group Inc.
Desert Tortoise
PRESENCE-OR-ABSENCE AND CLEARANCE SURVEYS

BIOLOGIST(S) P.M. S.S. N.C. DAY & DATE 3/24/09

PROJECT NAME & NUMBER CHEVRON SOLAR

City: LUCERNE VALLEY County: SAN B. State: CA

Transect# ____ MP to MP (mileposts): from NE (Santa Fe fire road and posthill plus buffer to 500' s. of private res. Length: ____ ft. Width: [✓ 30 ft] OR ____ ft.

Project Site/ROW ☒ Zone of Influence (ZOI) ☐ 500 Ft. from Project ROW

Time (start): 8:30 Cloud % 0 Temp: 47°F Wind: 0-3 Elevation: 3108 ft.

Time (end): 16:30 hrs Cloud % 0 Temp: 74°F Wind: 0,6 Elevation: 3126 ft.

Aspect ____ %Slope ____ Adjacent Land Use Open space, BLM, private res, ag field miles to west

Vegetation Community creosote-scrub/bursage scrub

Soil (rock, [✓ sand], [✓ caliche] etc.) ____ Land Form(s)- mesa, bajada, [✓ wash] etc., terrace.

SIGNS OF HUMAN DISTURBANCE – NUMBER AND TYPES SEEN

☑ TIRE TRACKS ☑ SHOTGUN/RIFLE SHELLS ☐ BLADING ☑ RAVENS ☑ TRASH
☑ DUMP SITES ☑ HUMAN FOOTPRINTS ☑ DOG SIGN ☐ OTHER

INFORMATION ON TORTOISE SIGN

SIGN #	TYPE scat, bone, burrow, etc.	CLASS# For scat burrows, shell remains	W x H x L or SIZE Width x Height x Length	Burrow Direction (aspect)	Nearest Plant Species	Elev. (feet)	GPS location (NAD 83)
1	burrow	—	10" x 4", 6"	North	creosote, bursage	3076	518414 3809573
2	burrow	—	12" x 12" x 2'	NE	Creosote bursage	3121'	518120 3809552
3	burrow	—	14" x 7 x 1'	N	Creosote, bursage	3114	518151 3809371
4	burrow	—	8" x 8" x 6"	W	Creosote, bursage	3135	518192 3809332
5	burrow	—	12" x 4" x 6"	W	" "	3104	518063 3809311
6	burrow						

Sign #	Comments on Conditions of shelter sites (active/inactive-why?), scat, shell remains, human disturbances. (continue on page 2 if necessary)
1	old class 5 burrow or blk-tailed jackrabbit burrow. photo #1
2	blk tailed jackrabbit burrow but deep - good for refuge/cover photo #2
3	2 burrows in wash photo #3 (power line goes to 2') - no scat.
4	old blk-tailed jackrabbit burrow. (no scat)
5	blk-t. jr burrow - deep .5-1', no scat

raven, ladder-backed woodpecker, [illegible], [illegible], desert horned lizard, long-nosed leopard lizard.
round-tailed ground sq.

Appendix E
Cultural Resources Report (Confidential – Available from BLM)

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Appendix F
Paleontology Literature and Records Review

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SAN BERNARDINO COUNTY MUSEUM
2024 Orange Tree Lane • Redlands, California USA 92374-4560
(909) 307-2669 • Fax (909) 307-0539 • www.sbcountymuseum.org
TDD (909) 792-1462

COUNTY OF SAN BERNARDINO
PUBLIC AND SUPPORT
SERVICES GROUP

ROBERT L. McKERNAN
Director

1 November 2009

Ecology and Environment, Inc.
attn: Christine McCollum
130 Battery Street, Suite #400
San Francisco, CA 94111

re: **PALEONTOLOGY LITERATURE AND RECORDS REVIEW, LUCERNE VALLEY SOLAR PLANT, SAN BERNARDINO COUNTY, CALIFORNIA**

Dear Ms. McCollum,

The Division of Geological Sciences of the San Bernardino County Museum (SBCM) has completed a literature review and records search for the above-named project property in the Lucerne Valley region of San Bernardino County, California. The proposed project property is situated in portions of sections 19, 20, 29, and 30, Township 4 North, Range 2 East, San Bernardino Base and Meridian, as seen on the Cougar Buttes, California 7.5' USGS topographic quadrangle (1971 edition).

Previous geologic mapping (Bortugno and Spittler, 1986) indicates that the proposed project property is located entirely upon Quaternary younger alluvium of Holocene or recent age. These sediments have low potential to contain significant nonrenewable paleontologic resources, and so are assigned low paleontologic sensitivity. However, these sediments may overlie older Pleistocene alluvium present in the subsurface. If present, this alluvium would have high potential to contain significant nonrenewable paleontologic resources, depending upon its lithology and depositional context. Similar older Pleistocene sediments elsewhere throughout this region have yielded the fossil remains of Pleistocene vertebrates (Jefferson, 1991; Scott and Cox, 2008). Excavation into these older sediments within the boundaries of this area therefore has high potential to contain significant nonrenewable paleontologic resources, where the sediments are not previously disturbed.

For this review, I conducted a search of the Regional Paleontologic Locality Inventory (RPLI) at the SBCM. The results of this search indicate that no previously known paleontologic resource localities are recorded by the SBCM from the proposed project site, nor from within several miles in any direction.

Recommendations

The results of the literature review and the check of the RPLI at the SBCM demonstrate that excavation for the proposed project property has low potential to impact significant nonrenewable

Board of Supervisors
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Fifth District

fossil resources. Undifferentiated Quaternary alluvium mapped at the surface has low paleontologic sensitivity. No program to mitigate impacts to fossil resources is recommended for this sedimentary unit at this time.

However, should Pleistocene older alluvium or other fossil-bearing rock units be encountered in the subsurface, or should significant vertebrate fossils be exposed during excavation, a qualified vertebrate paleontologist would be required to develop a program to mitigate impacts to nonrenewable paleontologic resources, including full curation of all recovered resources (Scott and others, 2004). This program would need to be consistent with the provisions of the California Environmental Quality Act (Scott and Springer, 2003), as well as with regulations currently implemented by the County of San Bernardino and the proposed guidelines of the Society of Vertebrate Paleontology.

The County of San Bernardino (Development Code §82.20.040) defines a qualified vertebrate paleontologist as meeting the following criteria:

Education: An advanced degree (Masters or higher) in geology, paleontology, biology or related disciplines (exclusive of archaeology).

Professional experience: At least five years professional experience with paleontologic (not including cultural) resources, including the collection, identification and curation of the resources.

The County of San Bernardino (Development Code §82.20.030) requires that paleontologic mitigation programs include, but not be limited to:

(a) Field survey before grading. In areas of potential but unknown sensitivity, field surveys before grading shall be required to establish the need for paleontologic monitoring.

(b) Monitoring during grading. A project that requires grading plans and is located in an area of known fossil occurrence, or that has been demonstrated to have fossils present in a field survey, shall have all grading monitored by trained paleontologic crews working under the direction of a qualified professional, so that fossils exposed during grading can be recovered and preserved. Paleontologic monitors shall be equipped to salvage fossils as they are unearthed, to avoid construction delays, and to remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. Monitors shall be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. Monitoring is not necessary if the potentially-fossiliferous units described for the property in question are not present, or if present are determined upon exposure and examination by qualified paleontologic personnel to have low potential to contain fossil resources.

(c) Recovered specimens. Qualified paleontologic personnel shall prepare recovered specimens to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates. Preparation and stabilization of all recovered fossils is essential in order to fully mitigate adverse impacts to the resources.

(d) Identification and curation of specimens. Qualified paleontologic personnel shall identify and curate specimens into the collections of the Division of Geological Sciences, San Bernardino County Museum, an established, accredited museum repository with permanent retrievable paleontologic storage. These procedures are also essential steps in effective paleontologic mitigation and CEQA compliance. The paleontologist must have a written repository agreement in hand prior to the initiation of mitigation activities. Mitigation of adverse impacts to significant paleontologic resources is not considered complete until curation into an established museum repository has been fully completed and documented.

(e) Report of findings. Qualified paleontologic personnel shall prepare a report of findings with an appended itemized of specimens. A preliminary report shall be submitted and approved before granting of building permits, and a final report shall be submitted and approved before granting of occupancy permits. The report and inventory, when submitted to the appropriate Lead Agency along with confirmation of the curation of recovered specimens into the collections of the San Bernardino County Museum, will signify completion of the program to mitigate impacts to paleontologic resources.

References

Bortugno, E.J. and T. E. Spittler, 1986. Geologic map of California, San Bernardino sheet, scale 1:250,000. California Division of Mines and Geology Regional Geologic Map Series, Map 3A.

Jefferson, G.T., 1991. A catalogue of late Quaternary vertebrates from California: Part Two, mammals. Natural History Museum of Los Angeles County Technical Reports, No. 7.

Scott, E. and S.M. Cox, 2008. Late Pleistocene distribution of *Bison* (Mammalia; Artiodactyla) in the Mojave Desert of southern California and Nevada. *In* X. Wang and L.G. Barnes (eds.) Geology and Vertebrate Paleontology of Western and Southern North America, Contributions in Honor of David P. Whistler. Natural History Museum of Los Angeles County Science Series No. 41, p. 359 - 382.

Scott, E. and K. Springer, 2003. CEQA and fossil preservation in southern California. The Environmental Monitor, Fall 2003, p. 4-10, 17.

Scott, E., K. Springer and J.C. Sagebiel, 2004. Vertebrate paleontology in the Mojave Desert: the continuing importance of "follow-through" in preserving paleontologic resources. In M.W. Allen and J. Reed (eds.) The human journey and ancient life in California's deserts: Proceedings from the 2001 Millennium Conference. Ridgecrest: Maturango Museum Publication No. 15, p. 65-70.

Please do not hesitate to contact us with any further questions you may have.

Sincerely,

Eric Scott, Curator of Paleontology
Division of Geological Sciences
San Bernardino County Museum

Appendix G
Dust Control Plan

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DUST CONTROL PLAN

LUCERNE SOLAR PROJECT

Dust Control Plan

Prepared by

CHEVRON ENERGY SOLUTIONS

345 California Street, 18th Floor
San Francisco, CA 94104

December 2009

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Dust Control Plan

1.0 INTRODUCTION

FRV, Lucerne Solar L.P. (Lucerne Solar), is planning to build a phased construction, 45 MW, solar photovoltaic power plant on 516 acres of BLM land in San Bernardino County. The site of the proposed Projects is located on Santa Fe Fire Trail, south of Old Woman Springs Road approximately 8 miles east of the junction of Barstow Road and Old Woman Springs Road as shown on Figure 1: General Facility Location.

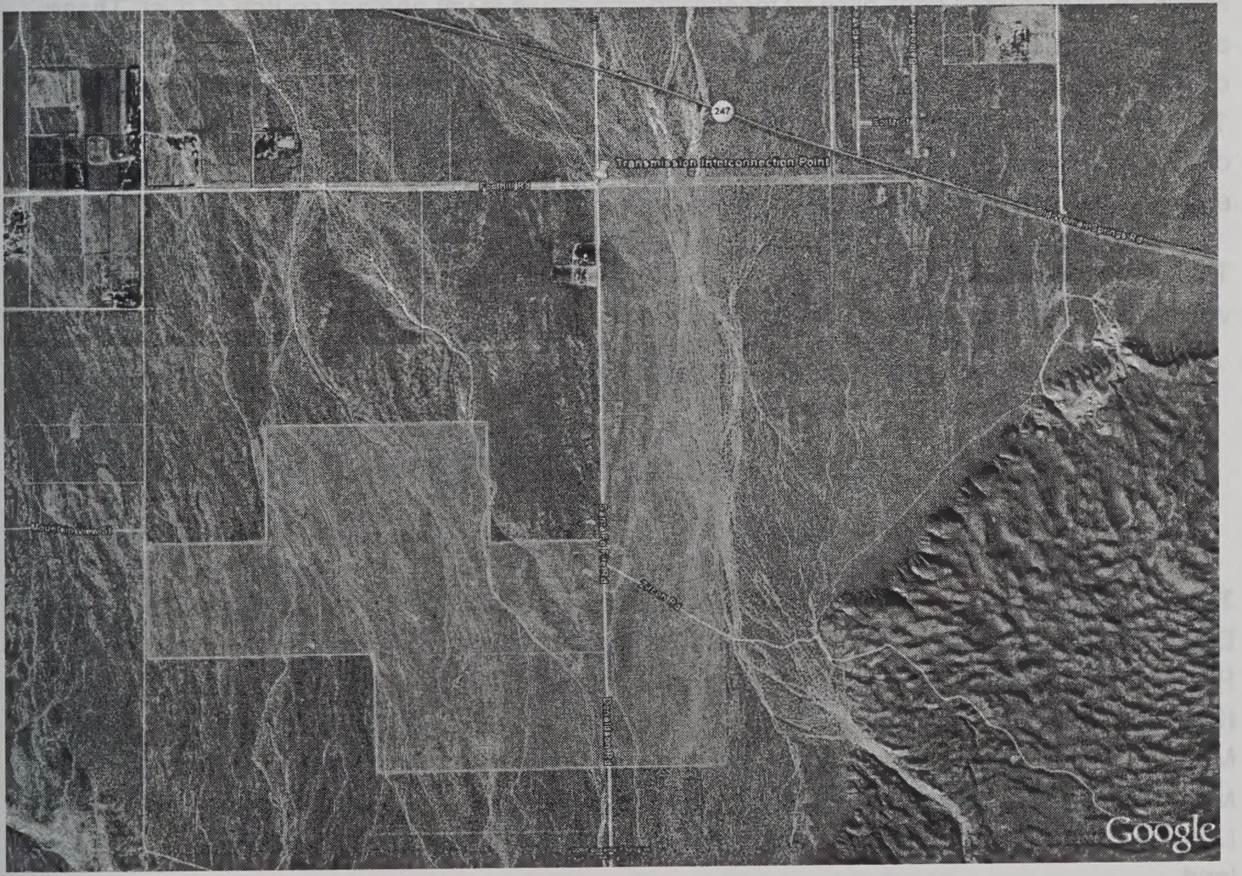

Figure 1: General Facility Location

The first phase will be 20 MW beginning construction in late 2010. The remaining phase of approximately 25 MW is dependent upon the availability of transmission capacity and the timing of future power sales contracts.

Construction of the proposed facilities will result in fugitive dust. Fugitive dust is particulate matter that is suspended in the air by wind or human activities and does not come from a point source such as a stack. Air quality regulations require the use of control techniques to minimize fugitive dust emissions. The goal is to eliminate visible airborne fugitive dust to the extent possible, given the construction techniques and requirements. This plan is designed to reduce fugitive dust emissions to a minimum from the Project.

2.0 FUGITIVE DUST SOURCES ON THE LUCERNE SOLAR PROJECT

Fugitive dust can be created directly from the activities involved in pipeline construction such as vegetation removal, grading, trenching, backfill, or topsoil replacement. Vehicles and equipment moving rapidly on unsurfaced roads and work areas can also create dust, while significant wind action on unprotected spoil piles or topsoil storage areas is yet another source of dust. These activities consist of a series of different operations, each with its own duration and potential for dust generation. In other words, emissions from any single construction site can be expected 1) to have a definable beginning and an end, and 2) to vary substantially over different phases of the construction process. This is in contrast to most other fugitive dust sources, where emissions are either relatively steady or follow a discernable annual cycle.

This dust control plan applies only to fugitive dust generated by construction activities and vehicle trips by support equipment on unpaved roads.

3.0 APPLICABLE RULES

The Lucerne Solar project is under the purview of the Mojave Desert Air Quality Management District (MDAQMD). The district's RULE 403.2, Fugitive Dust Control for the Mojave Desert Planning Area, was developed to ensure that the National Ambient Air Quality Standards (NAAQS) for PM10 will not be exceeded due to anthropogenic sources of fugitive dust within the Mojave Desert Planning Area (MDPA); and to implement the control measures contained in the Mojave Desert Planning Area Federal PM10 Attainment Plan. RULE 403.2 is applicable to the Lucerne Solar project due to its construction activities on Bureau of Land Management (BLM) land.

4.0 DUST CONTROL MEASURES IDENTIFIED BY RULES

During construction, the Lucerne Solar Project shall:

- Use periodic watering for short-term stabilization of Disturbed Surface Area to minimize visible fugitive dust emissions. For purposes of this Rule, use of a water truck to maintain moist disturbed surfaces and actively spread water during visible dusting episodes shall be considered sufficient to maintain compliance;
- Take actions sufficient to prevent project-related Trackout onto paved surfaces;
- Cover loaded haul vehicles while operating on Publicly Maintained paved surfaces;
- Stabilize graded site surfaces upon completion of grading when subsequent development is delayed or expected to be delayed more than thirty days, except when such a delay is due to precipitation that dampens the disturbed surface sufficiently to eliminate Visible Fugitive Dust emissions;
- Cleanup project-related Trackout or spills on Publicly Maintained paved surfaces within twenty-four hours; and
- Reduce non-essential Earth-Moving Activity under High Wind conditions. For purposes of this Rule, a reduction in Earth-Moving Activity when visible dusting occurs from moist and dry surfaces due to wind erosion shall be considered sufficient to maintain compliance.
- Provide Stabilized access route(s) to the project site as soon as is feasible. For purposes of this Rule, as soon as is feasible shall mean prior to the completion of Construction/Demolition activity;
- Maintain natural topography to the extent possible;
- Construct parking lots and paved roads first, where feasible; and
- Construct upwind portions of project first, where feasible.

During operation when undergoing weed abatement activity, the Lucerne Solar Project shall not:

- Disrupt the soil crust to the extent that Visible Fugitive Dust is created due to wind erosion.

5.0 ADDITIONAL DUST CONTROL MEASURES

5.1 RESIDENTIAL AREAS AND HIGHWAYS

Dust will be controlled so that impacts to adjacent residences are kept to a minimum at all times. Fugitive dust emissions near residential areas will be controlled either by the application of water on the construction right-of-way and access roads, by water and tackifier on topsoil and spoil piles, speed control on exposed surface areas, and the mechanical covering of exposed piles with plastic or other wind-resistant covers.

6.0 SAFETY MEASURES FOR DUSTY CONDITIONS

In areas adjacent to highways where dust could cause poor visibility, grading activities will be restricted to prevent unsafe conditions. Restrictions may include applying water as close to earth-moving equipment as possible, slowing the speed of construction equipment, spacing equipment further apart, increased traffic control, or shutting down operations. Lucerne Solar will coordinate with the California Highway Patrol to ensure adequate traffic control measures are in place, including the possibility of using flaggers to control traffic if extreme low visibility conditions develop.

7.0 MONITORING AND RECORDKEEPING

Environmental Inspectors will be primarily responsible for monitoring and enforcing the need for dust control. The contractor will implement dust control as specified above, and the Environmental Inspectors will be responsible for making sure that dust control is effective and recorded.

8.0 RESPONSIBLE CONTACT

he following individual(s) are responsible for the preparation, submittal, and implementation of his Dust Control Plan.

Project Name: Lucerne Solar Project

Certification of the Plan

The owner, principle operator, or the individual implementing must certify the plan.

I certify that all information contained herein and information submitted in the attachments to this document are true and correct.

Ralph Hollenbacher	Senior Manager, Technical Services Chevron Energy Solutions Company
Print Name	Title
Signature	Date

(415) 733-4910	(415) 733-4639	(415) 250-2672
Phone Number	Fax Number	Cell Number

Appendix H
Weed Control Plan

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WEED CONTROL PLAN
THE LUCERNE SOLAR
SAN BERNARDINO COUNTY, CALIFORNIA

Revision 1 dated January 14, 2010

Chevron Energy Solutions
345 California Street, 18th Floor
San Francisco, CA 94104

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Appendix B Herbicides Approved for Use on Public Lands in California
Appendix C Example California BLM Pesticide Use Proposal
Appendix D Example California BLM Pesticide Application Records Form

List of Acronyms and Abbreviations

°F	degrees Fahrenheit
BLM	Bureau of Land Management
BMP	Best Management Practices
Cal-IPC	California Invasive Plant Council
CDCA	California Desert Conservation Area
CDFA	California Department of Food and Agriculture
CDFG	California Department of Fish and Game
DPR	Department of Pesticide Regulation
EPA	U.S. Environmental Protection Agency
FLPMA	Federal Land and Policy Management Act
GIS	geographic information system
MOU	Memorandum of Understanding
mph	mile(s) per hour
MW	Megawatt
MWMA	Mojave Weed Management Area
NPPA	Native Plant Protection Act
PAR	pesticide application record
PEIS	Vegetation Treatments Using Herbicides on Bureau of Land
PPA	Plant Protection Act of 2000
Project	Lucerne Solar Project
PUP	pesticide use proposal
U.S.C.	U.S. Code
USDA	U. S. Department of Agriculture

SECTION 1 INTRODUCTION

1.1 PLAN PURPOSE

This weed control plan is intended to provide: (1) monitoring, preventative, and management strategies for weed control during construction activities at the Lucerne Solar Project (Project); (2) control and management of weeds in areas temporarily disturbed during construction where native seed will aid in site revegetation; and (3), a long-term strategy for weed control and management during the operation of the project.

1.2 WEED DEFINITION

The term ''noxious weed'' is defined in the federal Plant Protection Act (7 *U.S. Code* [U.S.C.] 7701 *et seq.*) as any plant or plant product that can directly or indirectly injure or cause damage to crops (including nursery stock or plant products); livestock, poultry, or other interests of agriculture; irrigation; navigation; the natural resources of the U.S.; the public health; or the environment. Weeds are typically characterized by non-native plants that aggressively colonize new areas and can grow to dominate native plant communities if uncontrolled. Weeds could alter physical or chemical soil conditions, out-compete native vegetation, and dominate the landscape to the detriment of native plants and wildlife. Weeds could also preempt ground and surface water resources, compromise agricultural operations, conflict with recreational values, create fire hazards, and compromise aesthetic values of native or urban landscapes. Weeds are often quick to colonize disturbed areas, including construction sites, roadsides, irrigated sites, or any other area with altered hydrology, soil structure, or soil chemistry.

1.3 OBJECTIVES

This plan lists and assesses weeds that do or could potentially occur in the project vicinity. It also provides a target list of weeds that will be controlled; survey methods for weed presence during construction and operation; weed control methods; and reporting requirements. The appropriate objectives for controlling potential weed infestations at the project site will be defined on a case-by-case basis.

Weed management objectives for the project include the following:

- Prevention: This objective is aimed at preventing infestation expansion and spread, and may be conducted with or without attempts to reduce infestation density. Prevention focuses on halting spread until suppression or eradication can be implemented, and is practical only to the extent that the spread of seeds or vegetative propagates can be prevented.
- Eradication: This control objective is aimed at the elimination of individuals of a particular species within a specified area. This will be the goal for most weed species at the project, and is appropriate where the weed is of considerable economic and environmental concern and the population size is manageable.
- Suppression: This objective is aimed at reducing current infestation density, but not necessarily directed at reducing the total area or boundary of the infestation. This applies to many widely distributed, high-density weeds where eradication is not feasible.

1.4 MANAGEMENT ROLES

Lucerne Solar is responsible for implementing this plan. It is anticipated that Lucerne Solar's contractors and other designees responsible for implementing components of this plan will include the following:

- Contractor(s) – Contractual language will be included in construction documents and ongoing maintenance contracts to ensure that contractors, subcontractors, vendors, maintenance personnel and other parties, performing either construction or ongoing maintenance or repairs at the project site, abide by and implement the provisions of this plan. Implementing the construction provisions of this plan will be a part of construction contracts. Restoration contractors, landscape contractors, and other specialists will implement specific provisions of this plan either as subcontractors to the general construction contractor, or through independent contracts with Lucerne Solar.
- Construction Manager – The construction manager will have ultimate oversight of the construction contractor to ensure compliance with the provisions of this plan.
- Environmental Compliance Adviser – Lucerne Solar will designate an environmental compliance adviser to provide oversight of construction and maintenance practices and ensure compliance with the provisions of this plan. The environmental compliance advisor will be contracted directly by Lucerne Solar and will coordinate with the construction manager to ensure contractor compliance with environmental requirements for construction and with the power plant operator to ensure compliance during ongoing maintenance activities.
- Bureau of Land Management – As the administering land management agency, the Bureau of Land Management (BLM) will provide ultimate approval of the contents of this plan, and compliance oversight of its provisions. BLM will provide timely review of work products including this plan, modifications or amendments to this plan, and subsequent reports as required in this plan.

SECTION 2 APPLICABLE LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

SECTION 2 APPLICABLE LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

2.1 FEDERAL LAWS AND REGULATIONS

2.1.1 Federal Noxious Weed Act Of 1974

The Federal Noxious Weed Act of 1974 (7 U.S.C. §§ 2801-2814, January 3, 1975, as amended 1988 and 1994) provides for the control and management of non-indigenous weeds that injure, or have the potential to injure, the interests of agriculture and commerce, wildlife resources, or the public health. It gives the Secretary of Agriculture broad powers in regulating transactions in and movement of noxious weeds. The act states that no person may import or move any noxious weed identified by regulations of the Secretary of Agriculture into or through the U.S., except in compliance with the regulations, which may require that permits be obtained. The act also requires each federal agency to develop a management program to control undesirable plants on federal lands under the agency's jurisdiction, and establish and adequately fund the program. Some of the provisions of this act were repealed by the Plant Protection Act of 2000 (PPA), including U.S.C. 2802 through 2813. However, Section 1 (findings and policy) and Section 15 (requirements of federal land management agencies to develop management plans) were not repealed (7 U.S.C. 2801 note; 7 U.S.C. 2814).

2.1.2 Plant Protection Act of 2000

The Plant Protection Act of 2000, as amended (7 U.S.C. 7701-7786) states that the detection, control, eradication, suppression, prevention, or retardation of the spread of plant pests or noxious weeds is necessary for the protection of the agriculture, environment, and economy of the U.S. This act defines the term ''noxious weed'' (7 U.S.C. 7702 § 403) to mean any plant or plant product that can directly or indirectly injure or cause damage to crops (including nursery stock or plant products), livestock, poultry, or other interests of agriculture, irrigation, navigation, the natural resources of the U.S., the public health, or the environment. This act specifies that the Secretary of Agriculture may prohibit or restrict the importation, entry, exportation, or movement in interstate commerce of any noxious weed if it is determined "that the prohibition or restriction is necessary to prevent the introduction into the [U.S.] or the dissemination of a plant pest or noxious weed within the [U.S.]," and authorizes the issuance of implementing regulations. Subsequent regulations implemented by the Noxious Weed Control and Eradication Act of 2004 amended the PPA.

2.1.3 Noxious Weed Control and Eradication Act of 2004

The Noxious Weed Control and Eradication Act of 2004 (P.L. 108-412) amended the PPA by adding a new subtitle, "Subtitle E--Noxious Weed Control and Eradication" (7 U.S.C. 7781- 7786), which authorizes the Secretary of Agriculture to establish a program to provide financial and technical assistance to public and private landowners for the control or eradication of noxious weeds. This act defines noxious weeds and removes references to statutes that were repealed upon enactment of the PPA. This act prohibits the movement of a federally designated noxious weed into or through the U.S. unless a permit is obtained for such movement and the movement is consistent with the specific conditions contained in the permit. This act specifies that such movement, under conditions specified in the permit, may not involve a danger of dissemination of the noxious weed in the U.S.; otherwise such a permit will not be issued.

2.2 STATE AND LOCAL LAWS AND REGULATIONS

2.2.1 Native Plant Protection Act

The Native Plant Protection Act (NPPA) of the 1977 Fish and Game Code (Sections 1900 through 1913) directed the California Department of Fish and Game (CDFG) to carry out the Legislature's intent to "preserve, protect and enhance rare and endangered plants in this State." The NPPA gave the CDFG Commission the power to designate native plants as "endangered" or "rare" and protect endangered and rare plants from take.

2.2.2 California Food and Agricultural Code

Various portions of this code pertain to weed management. Specifically, Food and Agricultural Code Section 403 states that the Department of Food and Agriculture should prevent the introduction and spread of injurious insect or animal pests, plant diseases, and weeds. Under Sections 7270 through 7224, the California Commissioner of Agriculture is granted the authority to investigate and control weeds, and specifically to provide funding, research, and assistance to weed management entities, including eligible weed management areas or county Agricultural Commissioners, for the control and abatement of weeds according to an approved integrated weed management plan.

California Food and Agriculture Code Section 5101 and 5205 provides for the certification of weed-free forage, hay, straw, and mulch. This portion of the code recognizes that many weeds are spread through hay, straw, and mulch, used for both forage and ground covers. The code allows for in-field inspection and certification of crops to ensure that live roots, rhizomes, stolons, seeds, or other propagative plant parts of weeds are not present in the crop to be harvested. Certified weed-free forage, hay, straw, and mulch are required on BLM land. Mulch and/or hay bale materials used for erosion control at the project will be required to meet this certification.

2.2.3 San Bernardino County General Plan

San Bernardino County has a General Plan that is the fundamental policy document for the unincorporated, privately-owned lands of San Bernardino County. It is adopted by the Board of Supervisors, and contains the goals, policies, and implementing actions for a variety of issues including natural and man-made hazards and natural and man-made resources. The purpose of the General Plan is to set the framework for decision-making regarding the County's long-term development and utilization of resources, and provides the rules by which land can be developed. The General Plan includes goals and policies to preserve rare and endangered species and protect areas of special habitat value; and to establish plans for long term preservation and conservation of biological resources (San Bernardino County Plan at II-C1-4). Proposed development projects must be compatible with policies set forth in the Biotic Resources and Resources Conservation overlays which identify special management for the protection of habitat that supports important flora and fauna in the unincorporated areas of the County.

2.3 STANDARDS

This section contains discussion of the conservation and management plans that are relevant to weed control at the project. These plans were created in response to either regulatory mandates, or internal agency guidance. This section contains a summary of these plans.

2.3.1 Conservation and Management Plans

Bureau of Land Management

The BLM has prepared a Programmatic Environmental Impact Statement (PEIS) for 17 Western States that describes vegetation treatments using herbicides for weed control. This document is the result of extensive public involvement and outlines the specific decisions, standard operating procedures, and mitigation measures for the use of herbicides on BLM lands. The selected alternative of the PEIS identifies the active herbicidal ingredients approved for use on BLM land, and the herbicidal ingredients that are no longer approved for use. The Record of Decision for the PEIS defers to approved land use plans the determination of areas to be treated through BLM's integrated pest management program, and makes no land use or resource allocations in this regard.

Appendix B, Herbicide Treatment Standard Operating Procedures, of the PEIS (Appendix A of this plan), specifies management of weeds and application of pesticides on BLM land. Table B-1, Prevention Measures, specifies avoidance measures to limit weed infestation, and Table B-2, Standard Operating Procedures for Applying Herbicides, provides details on herbicide application. The procedures listed in these appendix and tables are incorporated as requirements of this plan.

California Desert Conservation Area Plan

The California Desert Conservation Area (CDCA) comprises one of two national conservation areas established by Congress at the time of the passage of the Federal Land and Policy Management Act (FLPMA). The FLPMA outlines how BLM will manage public lands. Congress specifically provided guidance for the management of the CDCA and directed the development of the 1980 CDCA Plan (BLM 1980). The document provides no specifics about weed management, but specifies management strategies for broad areas of the plan boundary.

Mojave Weed Management Area MOU

The Mojave Weed Management Area (MWMA) was established in a Memorandum of Understanding (MOU) in 1996 as a coordinated approach among Federal, State and local agencies to improve the effectiveness of weed management efforts in the Mojave Desert. The focus of the MOU is on the exclusion, detection, eradication, and suppression of weeds, with a priority placed on the species listed as weeds by the California Department of Food and Agriculture and other species of local significance as they are identified. The signatory agencies and organizations will cooperate in developing coordinated work plans and seeking funds to support the activities of the MWMA. In addition, public education on weed identification, prevention, and control will be a primary goal of the MWMA. The geographic scope of the MWMA includes the portion of San Bernardino County in the Mojave Desert Resource

Conservation District, the portion of Inyo County east of Death Valley National Park, all of Death Valley National Park, and all of Joshua Tree National Park. As part of this MOU, the MWMA partners pledge to educate the public about weeds, their identification, prevention, and methods of control, and promote the control and prevention of weeds on private land.

SECTION 3 WEED ASSESSMENT

3.1 WEED SPECIES

Weeds are defined for this document as species of non-native plants that are included on the weed lists of the California Department of Food and Agriculture (CDFA 2007), the California Invasive Plant Council (Cal-IPC 2006), the *MWMA*, or those weeds of special concern identified by BLM. A list of all invasive species that do or could potentially occur in the project vicinity is provided in Table 1.

3.2 FIELD SURVEYS

Weeds were searched for during the biological field surveys. During protocol surveys, surveyors made lists of all plant species encountered in the field, taking special note of the distribution and abundance of non-native species that are classified as weeds on the site. The same procedure was used in surveys of the 1-mile buffer.

3.3 KNOWN AND POTENTIAL WEED OCCURRENCES

Several weeds are known to occur in the project vicinity. The weed of highest concern in the general area is Sahara mustard (*Brassica tournefortii*) because of the potential of this species to spread and impact native plant communities. Other weeds of concern are also present. Red brome (*Bromus madritensis ssp. rubens*) and russian thistle or tumbleweed (*Salsola tragus*). Table 1 lists potentially occurring invasive species, and identifies which species were observed during site surveys. Each invasive species has a rating based on the California Invasive Species Council rating system, and the CDFA.

SECTION 4 WEED MANAGEMENT AREAS

Weed management will occur site-wide; however, specific areas will require unique management considerations depending on a range of factors described in this section.

4.1 TEMPORARY DISTURBANCE AREAS

The Project will be designed to minimize ground disturbances and resulting environmental impacts wherever practicable. Santa Fe Fire Trail will be the main roadway used for site access. The number of service roads within the site for access and maintenance will be kept to a minimum and specifically located to provide main routes for quick access to the site for construction, maintenance, and operations. Culverts will be installed in a limited number of locations, as necessary, for crossing of natural washes. Site layout for the Project will be based on avoiding major washes and minimizing surface disturbing activities in order to preserve intact soil crusts on site.

Weed management issues at temporary construction areas include the fact that soil disturbance during construction and temporary use will create habitat well suited to disturbance-adapted invasive species and, therefore, measures to minimize the potential for weed introduction by personnel and equipment will be needed. Any areas temporarily disturbed will be revegetated, using a native seed mix. Chevron will submit a revegetation plan for BLM's review and approval. Revegetation areas will continue to be prone to weed invasion and establishment, and ongoing monitoring and management will be required.

Potential areas meeting these criteria are described below. Other temporary disturbance areas created during construction will follow a similar weed management strategy as those areas outlined below. Weed management measures for these areas, including monitoring frequency, target weed species, and control methods, are included in this plan.

4.2 PERMANENTLY DEVELOPED AREAS

The areas describe in this section would be permanently developed, but could support weedy species along peripheral disturbed areas and function as seed reservoirs to adjacent natural habitats if not managed.

Project construction will occur in two phases beginning in the northeastern corner of the site and moving south and west. Phase I development includes the northeastern section of the Project area down to the Zircon Road, the portion of the site bordered on the north by Zircon road and on the east by Santa Fe Fire Trail and the first phase development area West of Sante Fire Trail. Phase II includes the expansion of the Project to portions of land located both southwest and west of Phase I in the area West of Santa Fe Fire Trail. Due to the modularity of solar photovoltaic farms, construction for both phases will occur in incremental steps with sections of the solar field becoming operational before significant construction work on other sections of the field. It is expected that site construction will begin during the fourth quarter of 2010

Soil disturbance during construction will create habitat well suited to disturbance-adapted invasive species, and continual movement within the area of personnel and heavy equipment will potentially introduce weed propagules. The area will require ongoing weed monitoring and maintenance during construction, and equipment will require cleaning at wash stations as specified below. During operations, equipment and personnel will continue to access the area for maintenance of the inverters and solar arrays. Precipitation and wash water runoff from the cleaning of photovoltaic panels will provide a water source that could support weed establishment and growth. These areas will require continual weed management and control.

Landscaped Areas

Landscaped areas will be present near the buffer zone where the Joshua trees are transplanted. Ongoing weed control in these areas is anticipated due to the soil disturbance and application of irrigation water.

Roads

Roadsides and the medians of unpaved service tracks are vulnerable to weed invasion. Roads often alter local hydrology; are subject to initial and ongoing disturbance during construction, maintenance, and use; provide topographic variation that could capture wind or waterborne seed; and may be subject to seed distribution from passing vehicles. Ongoing weed management will target roadside weeds.

Other Permanent Facilities

Peripheral areas throughout the facility are anticipated where conditions are suitable for weed establishment. This may include soils that have been cleared, compacted, or otherwise disturbed; areas where hydrology is altered, such as from increased drainage from developed areas; or areas where continued vehicle or foot traffic persist. Ongoing weed management will survey and target these areas for management to avoid creation of weed seed reservoir areas, which could affect adjacent undisturbed habitats.

SECTION 5 MONITORING AND SURVEY METHODS

5.1 WEED IDENTIFICATION

Monitoring and removal of weeds requires skill and training in plant identification. Training in plant identification and field manuals with photographs of native desert plants and of common weeds will be provided to field staff including biological monitors, weed abatement contractors, plant operators and staff, and construction workers. Online resources that are available including the following:

- The University of California digital library at http://www.calflora.org/ contains species information and an extensive photo collection.
- The California Invasive Plant Council website is at http://www.cal-ipc.org. This website contains an invasive plant database, plant profiles, and extensive other information on invasive plants and control.
- The U.S. Department of Agriculture (USDA) National Invasive Species Information Center is at http://www.invasivespeciesinfo.gov/. This website has information on invasive species and links to the extensive USDA PLANTS database (http://plants.usda.gov/), with species profiles and photographs.
- The *MWMA* has weed management goals to protect and enhance biodiversity, water resources, reduce fire hazards, and protect agricultural interests. The website is at http://www.mojavewma.org/, and has information on the common problem weeds in the area.
- The California Native Plant Society maintains information including a database on California vegetation including rare, threatened, and endangered plants (http://www.cnps.org/).
- BLM also maintains a website with useful information on noxious weeds, including management strategies for weeds in California (http://www.blm.gov/weeds/).
- The Center for Invasive Plant Management maintains a website with useful information and resources, including plant profiles, and can be accessed at http://www.weedcenter.org/.
- *Weeds of California and other Western States* by Joseph M. DiTomaso and Evelyn A. Healy, 2006, University of California Department of Agriculture and Natural Resources, is a valuable resource and available at many online book suppliers.

5.2 SURVEYS AND MONITORING

5.2.1 Monitoring Methods

Surveys and monitoring will ensure timely detection and prompt eradication of weed infestations, which are essential to a long-term strategy for weed management.

Construction Areas

The environmental compliance advisor will oversee biological monitors who will be present during site clearing and construction activities. Biological monitors will be responsible for inspecting construction areas, identifying the presence of weeds, and inspecting equipment cleaning facilities for weed seed removal. The environmental compliance advisor will be responsible for prescribing management activities consistent with this plan when weeds become established. Monitoring of construction areas and access routes will be conducted as necessary to insure proper weed control.

General Operations Monitoring

General site monitoring of the operating facility will be conducted by operations personnel on an ongoing basis. Weed control will be conducted, as needed, by operations personnel, at a minimum of every other week during the growing season (March through August), and once a month during the remainder of the year. Operations personnel will be trained to identify weedy and native species.

Known Infestation Areas

Where weed infestation occurs, and treatment is implemented, the area will be targeted for ongoing monitoring to ensure that treatments are effective and that complete eradication has been achieved. Visits to known infestation areas will continue until weeds in the area are controlled.

5.2.2 Database and Mapping

Locations of weed occurrences, with data on species, detection date, growth stage, infestation extent, treatments implemented, results of treatment, and current status will be maintained during the construction and operation phases. This will not be a requirement for the previously designated ubiquitous invasives. A geographic information system (GIS) will be used to map and store data. The priority of infestation areas will be established based on species, vulnerability of the site to invasion, growth stage, and effectiveness of treatment. Also included will be areas mapped as vulnerable to weed invasions. Vulnerability will be assessed on the following: (1) availability of weed propagule sources, such as along roadsides, (2) areas disturbed, such as through land clearing and earthwork; or (3) nearby areas with known prior or treated weed infestations or existing infestations that are out of the managed area.

SECTION 6 WEED MANAGEMENT

6.1 SPECIES DESCRIPTIONS AND MANAGEMENT STRATEGY

Descriptions of the more common or troublesome weeds occurring or potentially occurring at the project are provided in this section, along with the basic weed management strategy applicable to each. Table 1 provides a complete list of the weed species of concern in this area, and Table 2 provides additional information on management strategy and control methods for observed and potentially occurring weed species. Management strategies must encompass not only eradication, but also identify the means of eradication and the plant species to be eradicated.

Not all invasive plant species can or should be eradicated. Certain ubiquitous exotic species (*e.g., Bromus madritensis ssp. rubens, Schismus spp., Erodium cicutarium, Avena spp.*) will initially be monitored only because control of these aggressive colonizers is impractical, and it would also likely slow site rehabilitation by slowing the rate of secondary succession and surface stabilization. In addition, these species can play a beneficial role in accelerating surface stabilization and, therefore, reduce soil erosion caused by sheet flow or high winds. Complete eradication of large areas where infestations are already established would likely adversely affect other pioneer species, and is likely to be impractical because the area is likely to be re-invaded from adjacent lands in the absence of physical barriers that isolate the area.

The following list provides brief descriptions of the weed species of particular concern at the project. Additional weed species are listed in Table 1.

- **Wild oats** (*Avena* spp.) Cal-IPC has determined that this plant has a moderate invasiveness rating in California (Cal-IPC 2006). BLM and other agencies recognize that because of the widespread distribution of wild oats, this species is not considered feasible to control; therefore, weed abatement efforts for wild oats will not be required.
- **Sahara mustard** or **African mustard** (*Brassica tournefortii*) was observed on the project site. Cal-IPC has declared this plant highly invasive (Cal-IPC 2006). This species will be eradicated whenever encountered.
- **Red brome** (*Bromus madritensis* ssp. *rubens*) was observed on the project site. This species is an introduced Eurasian grass adapted to warmer habitats that can be frequently found at the base of desert shrubs. It is widespread in the Mojave Desert and has been found in the project area. Seeds from this species can disperse readily and across large distances. Cal-IPC has declared this plant highly invasive (Cal-IPC 2006). Stands of red brome have played an important role in accelerating wildfires in desert scrub communities (Brooks 1999); a deleterious effect partly because warm-desert plant communities are ill-adapted to fire (Brown and Minich 1986). Because of its widespread distribution, red brome is not considered feasible for general control and weed abatement measures for this species will not be required.
- **Cheat grass** (*Bromus tectorum*) is among the most widely distributed invasive plant species in the western U.S. Closely related to red brome, it is adapted to colder steppe and woodland habitats. It is known to occur in the vicinity, but has not been observed on the project site. Cal-IPC has declared this plant highly invasive (Cal-IPC 2006). Because of its widespread

distribution, cheat grass is not considered feasible for general control and weed abatement measures will not be required.

- **Red-stemmed filaree** or **storksbill** (*Erodium cicutarium),* a widespread annual species common in disturbed habitats, was not observed on the project site. It can form dense, transient populations when conditions are suitable. It has a limited overall rating by Cal-IPC, generally because the ecological impacts of the species are considered minor. Because of its widespread distribution, red-stemmed filaree is not considered feasible for general control and weed abatement measures will not be required onsite.
- **Mediterranean grass** (*Schismus* spp.) was was not observed on the site. Cal-IPC has determined that this plant has a limited invasiveness rating in California (Cal-IPC 2006). BLM and other agencies recognize that because of the widespread distribution of Mediterranean grass, this species is not considered feasible to control; therefore, weed abatement efforts for Mediterranean grass will not be required.
- **Russian thistle** or **tumbleweed** (*Salsola tragus*) is particularly adapted to recently disturbed habitat, and tends to be restricted to roadway shoulders and to sites where the soil has been recently disturbed. This species was observed at the project site. It was widespread, but with a patchy distribution on the project site. Cal-IPC has determined that this plant has a limited invasiveness rating in California (Cal-IPC 2006). New occurrences should be eradicated along newly disturbed sites to the extent feasible. However, since this species is already established on the site complete eradication may be impossible and weed abatement efforts should focus on containment to areas where tumbleweed was already established prior to project commencement.
- **London rocket** (*Sisymbrium irio*) is widespread throughout the warm deserts of North America. This species was not observed at the project site, but is a common invader on disturbed sites. Cal-IPC has declared this plant moderately invasive (Cal-IPC 2006). London rocket will be eradicated at the project site wherever it is observed.

New Weeds

Weeds not identified in the descriptions above could also potentially colonize or invade the site, both during construction as well during operation. During construction, the environmental compliance advisor will be required to regularly update the list of potential weeds, and identify new potential threats. This will include developing a management strategy and management methods appropriate to the plant species and nature of the potential invasion. Similarly, the facility plant manager or appropriate designee during operations will be required to continually update the potential weed list and provide monitoring and management appropriate to new species.

6.2 PREVENTATIVE MEASURES

The prevention of invasive plants from colonizing new areas is far more cost-effective than eradication and control (Davies and Sheley, 2007). Therefore, preventative measures taken to the curb the spread of weed propagules and inhibit their germination should include the all measures listed in Appendix A, Table B-1, "Preventative Measures" or the BLM Field Office's best management practices for weed control.

6.2.1 Construction

Worker Environmental Training

Mandatory site environmental training for contractors or related personnel entering the site during construction will include weed management awareness training. Personnel affected will include contractors, subcontractors, inspection personnel, construction managers, construction personnel, and individuals bringing vehicles or equipment onto the site. Training will include weed identification and training on the impacts of weeds on agriculture, livestock, wildlife, and fire hazard. Impacts of weeds on native vegetation, wildlife, and fire activity will be discussed including an explanation of how invasive grasses provide a fine fuel understory which can spread fire from shrub to shrub and how this has historically been absent in the native desert ecosystem. Proposed measures to prevent the spread of weeds in areas currently not infested, and controls on their proliferation when already present, will also be explained.

Wash Stations

With the underlying principal of prevention being the most cost-effective way to deal with invasive plant species early, wash stations will be set up to remove mud and dirt from construction vehicles. This will prevent the spread of weed seeds into new habitats as trucks with mud and dirt containing seeds is one of the most common ways weed seeds are spread to new environments. Vehicles entering from offsite locations will be required to stop for cleaning. Heavy equipment entering the site on trailers will also require cleaning. The contractor will ensure that vehicles and equipment are free of soil and debris capable of transporting weed seeds, roots, or rhizomes before the vehicles and equipment are allowed to use access roads. Vehicles will be reasonably dry before leaving the wash station. Some weeds, such as Sahara mustard, require water for germination and therefore, vehicles leaving the station wet could promote recruitment of Sahara mustard along access roads.

Wash stations will be located to avoid sensitive biological resources, and will be constructed with either a concrete wash pad or a gravel pad. Silt fencing, weed-free certified hay bales, or other means of trapping wash water sediment and seeds will be installed around the perimeter of wash stations.

Using high-pressure water equipment, vehicles will be washed before entering the construction site. The wash down will concentrate on tracks, feet, or tires and on the undercarriage, with special emphasis on axles, frame, cross members, motor mounts, and on and underneath steps, running boards, and front bumper/brush guard assemblies. Vehicles or heavy equipment will be required to remove caked on mud and debris before entering site. Vehicle cabs will be swept out and refuse will be disposed of in waste receptacles. Sediment accumulated from the washing will be shoveled out daily and placed in a sealed container for disposal in an approved landfill. If removal requirements exceed the capability of the wash stations, equipment will be washed elsewhere before being allowed on the site.

Project workers will also inspect, remove, and dispose of weed seed and plant parts found on their clothing and personal equipment. These items will be bagged and disposed of in a dumpster for deposit in an approved landfill.

When vehicles and equipment are washed, a log will be kept stating the location, date and time, serial number and type of equipment, and methods used. The crewmember that washed the vehicle will sign the log. Written logs will be included in the monitoring reports.

Infestation Containment and Control

During construction, areas of concern will be identified and flagged in the field by biological monitors. The flagging will alert construction personnel that weeds are present and will prevent access into these areas until weed management control measures have been implemented. Contractors will avoid or minimize travel through these marked off weed-infested areas. Control measures will be implemented immediately as described in the sections below. The contractor will begin project operations in weed-free areas whenever feasible before operating in weed-infested areas, until the ECM has verified completion of weed treatments within weed-infested areas.

Site Soil Management

The contractor will limit the size of ground disturbance to the absolute minimum necessary to perform the activity safely and as designed. The contractor will also avoid creating soil conditions that promote weed germination and establishment to the greatest extent practicable. Soil conditions that promote weed germination and establishment include soil excavation/disturbance, vegetation removal, soil compaction, loss or removal of topsoil and introduction of chemical compounds, including fertilizer, and soil stockpiling.

During grading or excavation activities, the contractor will minimize transporting soil within the site to limit the potential spread of weed seeds onsite. In areas where weed infestations are identified, the contractor will stockpile cleared vegetation and salvaged topsoil adjacent to the area from which they are stripped to eliminate the transport of soil-borne weed seeds, roots, or rhizomes.

Weed-free Products

Straw or hay bales used for sediment barrier installations, gravel mulch, and soil may carry weed seeds. The contractor will ensure that straw or hay bales used for sediment barrier installations are obtained from certified sources that are free of weed seeds. Additional products such as gravel, mulch, and soil, may also carry weed seeds. Such products should be obtained from suppliers who can provide weed-free certified materials. To the greatest extent feasible, mulch will be generated from native vegetation cleared from the site itself. At no time will soil be imported onto the site.

Weed-free Seed

Seed purchased from commercial vendors for site revegetation will be labeled in compliance with the relevant provisions of the California Agriculture Code. In addition to having the correct label, the seed should be required to be free of weeds and the label should so state.

Site Reclamation

Currently there are no plans for site closure and reclamation. Should the Lucerne Solar project site ever be closed a reclamation and revegetation plan with the goal of reducing the extent of weeds that persist on the site following closure would be drafted and submitted to the BLM for review and approval.

6.2.2 Operations

Facility Staff Training

Mandatory site training for maintenance personnel will include weed management. Training will include weed identification and the impacts on agriculture, livestock, wildlife, and fire frequencies. Also explained will be the importance of preventing the spread of weeds in areas currently not infested, and controlling the proliferation of weeds already present.

Infestation Containment and Control

Areas of concern which contain concentrations or new occurrences of weeds will be identified and flagged by groundskeepers. The flagging will alert personnel of weed are presence and will prevent access into these areas until weed management control measures have been implemented. Immediate control measures will be implemented as described below.

6.2.3 Site Closure

Site decommissioning and closure should include drafting and implementation of a site revegetation and rehabilitation Plan. This plan will include measures to avoid weed establishment throughout the site, and to implement long-term site rehabilitation and revegetation of decommissioned facilities. Control of weed establishment should be a central goal of long-term site rehabilitation, the long-term success of which will be enhanced by revegetation measures promoting surface stability and soil development.

6.3 ERADICATION AND CONTROL METHODS

6.3.1 Unacceptable Weed Removal Methods

Tilling

Tilling is a weed-control practice used on agricultural lands that is inappropriate in this area for weed control purposes. Tilling is ineffective in desert landscapes and tilled weeds are likely to set seed, even after burial. In addition, tilling is likely to disturb native cover stock, and will also disrupt the natural structure and chemistry of the soil, allowing weed seeds to proliferate from soil disturbance. Fragmenting weeds resulting from tilling will also lead to more widespread growth of non-native plants.

Mowing

Mowing is sometimes used to reduce weed cover late in the growing season, typically after annuals have matured. This method merely cuts back the thatch that develops during the growing season and does not remove weeds. It is sometimes used as a fire control method, but will result in an aggravation of weed infestation problems rather than the removal/control of weeds. Mowing is problematic for the following reasons: (1) Mowing would severely damage existing native plants, including small individuals that may or may not be visible at the time of mowing, but could be pushing their way through the canopy as they mature; (2) Mowing, which is typically done late in the spring or early summer, would result in maturation of weed seed from existing weeds after they are cut and left to desiccate, increasing weed seed in the seed bank and ensuring a robust crop of weeds in subsequent years; and (3) Native ground and shrub nesting birds could potentially use the site as a breeding ground between February and August. The federal Migratory Bird Treaty Act (16 U.S.C. 703-712; 50 Code of Federal Regulations 10) prohibits the "take" of migratory birds, and protects eggs, nests, and feathers, unless permitted. Take is defined in part as "pursue, hunt, take, capture, kill, or attempt to take, capture, or kill any migratory bird, any part, nest, or eggs of any such bird." Hence, mowing activity during the breeding season would potentially violate this federal law.

6.3.2 Physical Removal of Weeds

The type of physical control method employed will depend upon the size and extent of weed species targeted for removal as well as the root structures of these plants. Physical control methods range from manual hand pulling of weeds to the use of hand tools to provide enough leverage to pull out the entire plant and associated root systems. Hand or power tools can also be employed to uproot, girdle, or cut plants. The Root Talon and Weed Wrench are handheld tools designed to grip the plant stems and provide enough leverage to remove roots, they may be used to pull out woody shrubs such as tamarisk or Russian olive. This effort should be focused on weed species that have a single-root mass, facilitating easy removal. Hand removal by pulling is appropriate when the plants are large enough that they will not break and leave the roots structures behind to re-sprout. For localized weed control, this is the most effective method. Hand-pulling is less effective in large areas and with weed species that spread through an underground root system (*e.g.*, Bermuda grass).

In small areas, hoeing and weed whipping can be employed to control weeds. However, care must be employed when using these methods adjacent to native plants to prevent damage to native plants. Hoeing or weed whipping must only be employed prior to a plant setting seed, otherwise this disturbance would only serve to further disperse and promote the establishment of the weed species. Pertinent considerations for hoeing and weed whipping include the following:

- Hoeing works best on patches of small weeds and with weeds that have a single-root mass. It is less effective on larger weeds that can regenerate from cut roots. It should not be used on weeds approaching maturity, as seeds can mature and be released on cut plants. Hoed plant material should be bagged and removed offsite.
- Weed whipping can be used for weed removal in limited upland areas with herbaceous plant covers; however, it should not be used on weeds approaching maturity, as seeds can mature and be released on cut plants, and care must be employed when weed whipping adjacent to native plants. Cut plant material should be bagged and removed offsite.

6.3.3 Chemical Methods for Weed Removal

Herbicide application is a widely employed, effective control method for removing invasive weed species. One consideration is the possible inadvertent application of herbicide to adjacent native plants. Herbicide application can become a challenge when weeds are interspersed with native cover.

Permitting and Regulatory Requirements

Prior to application of herbicide, contractors will be required to obtain required permits from state and local authorities. Permits may contain additional terms and conditions that go beyond the scope of this plan. Only a State of California and federally certified contractor, who is also approved by BLM, will be permitted to perform herbicide applications. Herbicides will be applied in accordance with applicable laws, regulations, and permit stipulations. Only herbicides and adjuvants approved by the State of California and federal agency for use on public lands will be used within or adjacent to the project site. A list of approved herbicides and adjuvants is available in Appendix B.

The *Final Programmatic EIS on Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States* lists 18 herbicides acceptable for use on BLM lands (USDI 2007). Guidelines for the use of chemical control of vegetation on BLM lands are presented in the *Chemical Pest Control Manual* (BLM, n.d.). These guidelines require submittal of a pesticide use proposal (PUP) and pesticide application records (PAR) for the use of herbicides on BLM lands. Only herbicides and adjuvents approved by BLM and California Department of Pesticide Regulation for use on public land shall be used. A sample form required for the submittal of a PUP is included in Appendix C.

Lucerne Solar will submit PARs for each use of herbicides on BLM lands within 24 hours of application to the BLM Barstow Field Office. The BLM, in turn, will provide the San Bernardino County DPR with pesticide use reports. A sample form required for submittal of PARs is included in Appendix D. The occurrence of weeds within the project footprint, or where the weeds occur, will be reported to the BLM Barstow field office. The appropriate weed control procedures, including target species, timing of control, and method of control, will be determined in consultation with BLM personnel. Lucerne Solar will be responsible for providing the necessary trained personnel or hiring a contractor to implement the required weed control procedures.

Types of Herbicides

Herbicides are characterized by the way in which they inhibit plant growth. Herbicides are characterized as pre-emergent, post-emergent, selective and nonselective. A pre-emergent herbicide controls un-germinated seeds by inhibiting germination while a post-emergent herbicide is lethal to emerged plants. Some herbicides have both pre- and post-emergent activity. A selective herbicide will be active on some species of plants and not others, usually distinguishing between grasses (monocots) and broadleaf plants (dicots). A non-selective herbicide is one that is lethal to any plant species to which it is applied.

Herbicides kill plants through either contact or systemic action. Contact herbicides are most effective against annual weeds and kill only the plant parts on which the chemical is deposited. Systemic herbicides are absorbed either by roots or foliar parts of a plant and are then translocated within the plant system to tissues that might be remote from the point of application. Although systemic herbicides can be effective against annual and perennial weeds, they are particularly effective against established perennial weeds.

Pre-emergent herbicides inhibit germination of annuals from seed, but generally do not control perennial plants that germinate from bulbs, corms, rhizomes, stolens, or other vegetative structures. Common pre-emergent herbicide classes include the following:

- Dinitroaniline Type: Examples of this class are pendimethalin (Weedgrass™), trifluralin (Treflan™), benefin (Balan™), and combinations of these. These herbicides provide for pre-emergence control of annual grasses and other annuals. They are mitotic (cell division) inhibitors and are primarily effective in inhibiting root growth of germinating seeds. Selectivity is physiological or chemical in nature. Some of these herbicides could be lost by volatilization, and should not be applied in temperatures above 90 degrees Fahrenheit (°F). These herbicides need to be watered into the soil for proper activation. Some can persist for several months.
- Dithiopyr (Dimension™) belongs to a new class of herbicide known as pyridines. It is a selective herbicide primarily used for pre-emergence annual grass control in established turfgrass. However, it can be used for post-emergence control of young grass seedlings. It inhibits cell division and cell growth of meristematic regions (growing points of roots and shoots). Dithiopyr is lost from soil by chemical and microbial degradation.

The most commonly used post-emergent, non-selective herbicides contain a family of chemicals called glyphosates (N-[phosphonomethyl] glycine). Glyphosate is a non-selective, systemic herbicide that is effective on many annual and perennial plants. It works by blocking an enzyme pathway that is important for plant protein synthesis, which is most effective if full coverage over the plants leaf is accomplished. However, because of systemic action, even partial coverage can result in plant mortality. The herbicide is typically used in conjunction with linseed oil or another surfactant, which aids in spreading an even layer across the surface of the leaves. Because glyphosate can also be lost to volatilization, they should not be applied when the temperature exceeds 90°F.

The United States Environmental Protection Agency (EPA 1993) has deemed glyphosate to have a relatively low degree of oral and dermal acute toxicity. It is considered to be immobile in soil and readily degraded by soil microbes to the metabolite aminomethyl phosphonic acid and then to carbon dioxide. EPA states that it is minimally toxic to birds, fish, aquatic invertebrates, and honeybees (EPA 1993).

Application and Handling

Herbicide application will be based on information gathered from the BLM. Before application of herbicide, Lucerne Solar's Contractors will obtain any required permits from the local authorities. Permits may contain additional terms and conditions that go beyond the scope of this management plan. Only A State and Federally certified contractor, approved by the BLM, will perform herbicide applications. All herbicide application will be applied in accordance with applicable laws and regulations and permit stipulations. Only herbicides and adjuvants approved by California and for use on public lands will be used within or adjacent to the project site. The following general precautions will be implemented for pesticide application:

Limitations

All herbicide applications must follow United States Environmental Protection Agency label instructions. Application of herbicides will be suspended when any of the following conditions exists:

- Wind velocity exceeds 6 miles per hour (mph) during application of liquids or 15 mph during application of granular herbicides.
- Snow or ice covers the foliage of weeds.
- Precipitation is occurring or is imminent.
- Air temperatures exceed 90°F.

Transport and Mixing

During the construction phase, herbicides will be transported to the project site daily with the following provisions:

- Only the needed quantity for that day's work will be transported.
- Concentrate will be transported in approved containers only and in a manner that will prevent tipping or spilling, and in a location that is isolated from the vehicle's driving compartment, food, clothing, and safety equipment.
- Mixing will be done offsite, over a drip-catching device, and at a distance greater than 200 feet from open or flowing water, wetlands, or other sensitive resources. No herbicides will be applied at these areas unless authorized by appropriate regulatory agencies.
- Herbicide equipment and containers will be inspected for leaks daily. Disposal of spent containers will be in accordance with the herbicide label.
- During the operations phase of the project, herbicides will be stored only in cabinets of approved design and will be under lock and key.

Worker Safety

The use of small quantities of chemical herbicides will be required at the project site. Site workers have the potential to come into contact with herbicides during application and during inverter servicing and solar array inspections in areas where herbicides have been used to control weeds.

The following Best Management Practices (BMP) will be followed to ensure worker safety at the project site:

- The project site will follow all appropriate California Department of Pesticide Regulation (DPR) requirements regarding the use of herbicides.
- Pesticide safety training for all workers including training on how to use application equipment and specific safety precautions for each herbicide being applied.
- Personal protective equipment will be supplied for every worker.

- Decontamination supplies will be available to all workers who face exposure to herbicides including showers, soap, towels and a change of clothing.
- Emergency information posted including the location of the nearest medical facility and instructions on what to do in the event of an emergency.
- Emergency transportation in the event of accidental exposure.
- Project site communication during and following herbicide application so that herbicides do not contact anyone through drift.
- Required application equipment checks.
- Observance of the recommended time before entering an area where herbicides have been applied so that trucks and workers inspecting solar arrays and inverters are not exposed to herbicides.

Herbicide Spills and Cleanup

Reasonable precautions will be taken to avoid herbicide spills. In the event of a spill, immediate cleanup will be initiated. Contractors will keep spill kits in their vehicles and in herbicide storage areas to allow for quick and effective response to spills.

The following items are to be included in the spill kit:

- protective clothing and gloves,
- absorptive clay, "kitty litter," or other commercial adsorbent,
- plastic bags and bucket,
- shovel,
- fiber brush and screw-in handle,
- dust pan,
- caution tape,
- highway flares (use on established roads only), and
- detergent.

Response to herbicide spills will vary with the size and location of the spill, but general procedures include the following:

- BLM notification,
- traffic control,
- dressing the cleanup team in protective clothing,
- stopping the leaks,
- containing the spilled material,

- cleaning up and removing the spilled herbicide or contaminated adsorptive material and soil, and
- transporting the spilled pesticide and contaminated material to an authorized disposal site.

Spray Methods

Vehicle-mounted sprayers (*e.g.*, handgun, boom, and injector) will be used mainly in open areas that are readily accessible by vehicle. Hand application methods (*e.g.*, backpack spraying) that target individual plants will be used to treat small or scattered weed populations in rough terrain. Calibration checks of equipment will be conducted at the beginning of spraying and periodically throughout treatment to ensure that proper application rates are achieved.

Controlling Post-emergent Herbaceous and Woody Vegetation

Suggested managing strategies and control methods for observed and potentially occurring weeds at the Lucerne Solar project site are provided in Table 2.

Controlling Pre-emergent Vegetation

Generally, it is anticipated that there are few areas where pre-emergent vegetation control would be required. Pre-emergent herbicides work only on vegetation reproducing from seed, and are not effective on other types of propagules, such as resprouts from root crowns which have been cut, rhizomes, or other material. The following situations may require use of pre-emergent herbicides:

- Areas that have repeated weed problems with annual plants, with evidence of a robust weed seed crop in the seed bank, will be sprayed with pre-emergent herbicides during appropriate pre-germination periods.
- Areas beneath the southern edges of the solar arrays, because these areas will receive any drainage of wash water and precipitation, can be particularly vulnerable to weed infestations.
- Areas surrounding the developed plant facilities, where vegetation is not planted, could benefit from pre-emergent treatments if weed problems are persistent.

Generally, pre-emergent herbicides would not be appropriate for revegetation areas or other native habitats because they are likely to inhibit the germination and growth of desirable native plant seed being used for restoration.

6.3.4 Competitive Vegetation

The use of native plants to out-compete invasive weed species is an effective, long-term weed control strategy incorporated for this project site. Following BMP measures laid out for Lucerne Solar, a seed mix of native plant species will be distributed within temporary disturbance areas and in other disturbed areas following completion of the project. Establishment of these species has the potential to exclude weed invasion, and over time, weed control will require less effort.

SECTION 7 REPORTING REQUIREMENTS

7.1 REPORT CONTENT

Implementation of the noxious weed management plan will include the following data collection and reporting guidelines.

7.1.1 Construction Reports

During the project construction phases, ongoing reporting on weed management will be included in construction weed monitoring reports. Construction weed monitoring reports will include the following information:

- Survey findings on location, type, extent, and density of weeds. These data will include mapping and photographs, as appropriate, as well as textual and tabular data content to fully describe conditions on the project site.
- Management efforts, including date, location, type of treatment implemented, and results. Ongoing evaluation of success of treatment will be included.
- Information on implementation and success of preventative measures, including status of equipment wash facilities and summary data of use; data on the worker environmental training program, including participants.
- Summary description of revegetation efforts undertaken, and their current status.

7.1.2 Long-term Monitoring Reports

After implementation of site revegetation using native seed mixes, long-term monitoring reports will be focused on success of revegetation sites. Weed management measures will be included in these reports, and will include the following relevant information:

- Survey findings on location, type, extent, and density of weeds. These data will include mapping and photographs, as appropriate, as well as textual and tabular data content to fully describe conditions on the project site.
- Management efforts, including date of efforts, location, types of treatment implemented, and results. Ongoing evaluation of success of treatment will be included.
- The reports will also include a complete description of restoration efforts and status at meeting performance criteria.

7.2 REPORTING PERIODS

All reporting concerning weed management and re-vegetation shall be submitted to the BLM Barstow Field Office.

7.2.1 Construction Period

It is anticipated that monthly records will be kept by the environmental compliance advisor and the monitoring team.

A single post-construction report will be produced after each phase of construction is completed at Lucerne Solar, with a section summarizing the overall results of weed management, and weed status at the site. Pesticide application records (PAR) will be provided to the BLM Barstow field office on a monthly basis.

7.2.2 Long-term Monitoring Reports

Pesticide application records (PAR) will be provided to the BLM Barstow field office on a monthly basis. Annual monitoring reports will be produced for the duration of the monitoring period. The site surveys conducted to support this are described as follows:

- Monthly surveys of following native seed mix application will be conducted for the first year after installation. The data and results of these surveys will be compiled into the first year annual report, which include information on weed management activities during that year.
- Quarterly visits will be implemented in year two. Results of quarterly visits will be summarized and reported in the second year annual report.
- Thereafter, semi-annual site visits will be conducted, summarized, and reported in an annual report through the completion of the monitoring period.
- At the end of the monitoring period, or if success criteria are met before that, a final monitoring report will be produced to describe the outcome to date of proposed restoration, including status of weed management on the project site.

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Table 1
Observed and Potentially Occurring Invasive/Noxious Weeds at Lucerne Solar Project Site

Scientific Name	Common Name	Habitats of Concern and Comments	Observed During Surveys and Anticipated Distribution in Project Area	CDFA Rank	Noxious Weed (Yes or No)
Ailanthus altissima	tree of heaven	Riparian areas, grasslands, oak woodland. Impacts highest in riparian areas.	Not observed.	C	Yes
Alhagi camelorum	camel thorn	Grassland, meadows, riparian and desert scrub, Sonoran thorn woodland. Very invasive in southwestern states. Limited distribution in California.	Not observed.	A	Yes
Avena barbata; A. fatua	slender wild oats; wild oats	Coastal scrub, grasslands, oak woodland, forest. Very widespread, but impacts more severe in desert regions.	Not observed.	Not Listed	Yes
Brassica tournefortii	Sahara mustard	Desert dunes, desert and coastal scrub.	Observed; but with a patchy distribution.	Not Listed	Yes
Bromus diandrus	ripgut brome	Dunes, scrub, grassland, woodland, forest. Very widespread, but monotypic stands uncommon.	Not observed.	Not Listed	Yes
Bromus madritensis ssp. *madritensis*	compact brome	Scrub, grassland, desert washes, woodlands.	Observed throughout the project area.	Not Listed	No

Table 1
Observed and Potentially Occurring Invasive/Noxious Weeds at Lucerne Solar (Continued)

Scientific Name	Common Name	Habitats of Concern and Comments	Observed During Surveys and Anticipated Distribution in Project Area	CDFA Rank	Noxious Weed (Yes or No)
Bromus madritensis ssp. *rubens*	red brome	Scrub, grassland, desert washes, woodlands.	Not observed.	Not Listed	Yes
Bromus tectorum	downy brome, cheatgrass	Interior scrub, woodlands, grasslands, pinon/Joshua tree woodland, chaparral.	Observed throughout the project area.	Not Listed	Yes
Cynodon dactylon	Bermuda grass	Riparian scrub in southern California. Common landscape weed, but can be very invasive in desert washes.	Not observed.	C	Yes
Descurainia sophia	flixweed, tansy mustard	Scrub, grassland, woodland. Impacts appear to be minor, but locally more invasive in northeast California.	Not observed.	Not Listed	Yes
Elaeagnus angustifolia	Russian olive	Interior riparian. Impacts more severe in other western states. Current distribution limited in California.	Not observed.	Not Listed	Yes
Erodium cicutarium	red-stemmed filaree	Many habitats. Widespread. Impacts minor in wildlands. High-density populations transient.	Observed throughout the project area.	Not Listed	Yes

Table 1
Observed and Potentially Occurring Invasive/Noxious Weeds at Lucerne Solar
(Continued)

Scientific Name	Common Name	Habitats of Concern and Comments	Observed During Surveys and Anticipated Distribution in Project Area	CDFA Rank	Noxious Weed (Yes or No)
Halogeton glomeratus	halogeton	Scrub, grasslands, pinyon-juniper woodland. Larger problem in Nevada. Monotypic stands are rare.	Not observed.	A	Yes
Lactuca serriola	prickly lettuce	Primarily an agricultural and roadside weed.	Not observed.	Not Listed	No
Malva parviflora	cheeseweed	Common in disturbed places throughout California. More widespread in desert regions.	Not observed.	Not Listed	No
Mesembryanthemum crystallinum	crystalline iceplant	Coastal bluffs, dunes, scrubs, grasslands. Limited distribution. Locally problematic, especially in southern California.	Not observed.	Not Listed	Yes
Phalaris minor	Mediterranean canary grass	Common in disturbed areas especially near washes. Widespread in low elevation California deserts.	Not observed.	Not Listed	No

Table 1
Observed and Potentially Occurring Invasive/Noxious Weeds at Lucerne Solar (Continued)

Scientific Name	Common Name	Habitats of Concern and Comments	Observed During Surveys and Anticipated Distribution in Project Area	CDFA Rank	Noxious Weed (Yes or No)
Salsola paulsenii	barbed-wire Russian thistle	Desert and Great Basin scrub. Limited distribution. Impacts in desert appear to be minor.	Not observed; widespread but typically uncommon except in recently disturbed habitats.	C	Yes
Salsola tragus; S. kali; S. pestifer	Russian thistle; tumble weed	Desert dunes and scrub, alkali playa. Widespread. Impacts minor in wildlands.	Observed; but with a patchy distribution.	C	Yes
Schismus arabicus, Schismus barbatus	Mediterranean-grass	Scrub, thorn woodland. Widespread in deserts. Impacts can be more important locally.	Observed throughout the project area.	Not Listed	Yes
Sisymbrium irio	London rocket	Scrub, grasslands. Widespread. Primarily in disturbed sites. Impacts vary locally.	Observed throughout the project area; but with a patchy distribution.	Not Listed	Yes
Solanum elaeagnifolium	white horsenettle	Primarily agricultural weed, but escaping to wild lands in other countries. May be expanding range.	Not observed.	B	No

Table 1
Observed and Potentially Occurring Invasive/Noxious Weeds at Lucerne Solar (Continued)

Scientific Name	Common Name	Habitats of Concern and Comments	Observed During Surveys and Anticipated Distribution in Project Area	CDFA Rank	Noxious Weed (Yes or No)
Sonchus oleraceus	common sow thistle	Primarily an agricultural weed.	Not observed.	Not Listed	No
Tribulus terrestris	puncture vine	Many habitats. Common in disturbed areas. A pernicious weed, can be controlled by introduced weevils.	Not observed.	C	No

Table 2
Managing Strategies and Control Methods for Observed and Potentially Occurring Weeds at the Lucerne Solar Project Site

Scientific Name	Common Name	Management Strategy	Control Method
Ailanthus altissima	tree of heaven	Monitor for occurrence, and eradicate if found.	***Mature Trees:*** Cut trees and apply 100 percent herbicide to cut stem; spray new shoots - See Section 6.3.3, Chemical Methods for Weed Removal
			Saplings: Pull out entire plant and root - See Section 6.3.2, Physical Removal of Weeds
Alhagi camelorum	camel thorn	Monitor for occurrence, and eradicate if found.	***Individual Plants:*** Pull out entire plant and root and bag for disposal - see Section 6.3.2, Physical Removal of Weeds; Hand Pulling
Avena barbata; Avena fatua	Slender wild oaks; wild oats	No Action; allow colonization as pioneer species in revegetation areas.	N/A
Brassica tournefortii	Sahara mustard	Monitor for occurrence in December-January prior to seed set, and eradicate if found; continue to monitor occurrence sites to ensure complete eradication.	***Individual Plants:*** Pull out entire plant and root and bag for disposal - see Section 6.3.2, Physical Removal of Weeds; Hand Pulling
Bromus diandrus	Ripgut Brome	Monitor for occurrence and eradicate if found.	***Stands:*** Spray with post-emergent, systemic, selective (monocot) herbicide; after senescence, remove with flail mower and bag for disposal - See Section 6.3.3, Chemical Methods for Weed Removal
Bromus madritensis ssp. *rubens*	red brome	No Action; allow colonization as pioneer species in revegetation areas.	N/A
Bromus tectorum	downy brome, cheatgrass	No Action; allow colonization as pioneer species in revegetation areas.	N/A

Table 2

Managing Strategies and Control Methods for Observed and Potentially Occurring Noxious Weeds at Lucerne Solar Project Site (Continued)

Scientific Name	Common Name	Management Strategy	Control Method
Cynodon dactylon	Bermuda grass	Monitor for and eradicate if found.	***Select Occurrences:*** Pull out entire plant and root and bag for disposal - see Section 6.3.2, Physical Removal of Weeds; Hand Pulling
			Stands: Spray with post-emergent, systemic, selective (monocot) herbicide; after senescence, remove with flail mower and bag for disposal - See Section 6.3.3, Chemical Methods for Weed Removal
Descurainia sophia	flixweed, tansy mustard	Monitor for occurrence, and eradicate if found.	***Individual Plants:*** Pull out entire plant and root and bag for disposal - see Section 6.3.2, Physical Removal of Weeds; Hand Pulling
Elaea gnus angustifolia	Russian olive	Monitor for occurrence and eradicate if found.	***Mature Trees/Shrubs:*** Cut trees and apply 100 percent herbicide to cut stem; spray new shoots - See Section 6.3.3, Chemical Methods for Weed Removal
			Saplings: Pull out entire plant and root - See Section 6.3.2, Physical Removal of Weeds
Erodium cicutarium	red-stemmed filaree	No Action; allow colonization as pioneer species in revegetation areas.	*N/A*
Halogeton glomeratus	halogeton	Monitor for occurrence, and eradicate if found.	***Select Occurrences:*** Pull out entire plant and root and bag for disposal - see Section 6.3.2, Physical Removal of Weeds; Hand Pulling
			Monotypic Stands: Spray with post-emergent herbicide; after senescence, remove with flail mower and bag for disposal - See Section 6.3.3, Chemical Methods for Weed Removal
Lactuca serriola	Prickly lettuce	Monitor for occurrence, and eradicate if found.	***Individual Plants:*** Pull out entire plant and root and bag for disposal - see Section 6.3.2, Physical Removal of Weeds; Hand Pulling

Table 2
Managing Strategies and Control Methods for Observed and Potentially Occurring Noxious Weeds at Lucerne Solar Project Site (Continued)

Scientific Name	Common Name	Management Strategy	Control Method
Malva parviflora	cheeseweed	Monitor for occurrence and eradicate if found.	***Select Occurrences:*** Pull out entire plant and root and bag for disposal - see Section 6.3.2, Physical Removal of Weeds; Hand Pulling
			Monotypic Stands: Spray with post-emergent herbicide; after senescence, remove with flail mower and bag for disposal - See Section 6.3.3, Chemical Methods for Weed Removal
Mesembryanthemum crystallinum	Crystalline iceplant	Monitor for occurrence, and eradicate if found.	***Select Occurrences:*** Pull out entire plant and root and bag for disposal - see Section 6.3.2, Physical Removal of Weeds; Hand Pulling
			Monotypic Stands: Spray with post-emergent herbicide; after senescence, remove with flail mower and bag for disposal - See Section 6.3.3, Chemical Methods for Weed Removal
Phalaris minor	Mediterranean canary grass	Monitor for occurrence and eradicate if found.	***Select Occurrences:*** Pull out entire plant and root and bag for disposal - see Section 6.3.2, Physical Removal of Weeds; Hand Pulling
			Monotypic Stands: Spray with post-emergent herbicide; after senescence, remove with flail mower and bag for disposal - See Section 6.3.3, Chemical Methods for Weed Removal
Salsola paulsenii	barbed-wire Russian thistle	Monitor for occurrence, and eradicate if found.	***Select Occurrences:*** Pull out entire plant and root and bag for disposal - see Section 6.3.2, Physical Removal of Weeds; Hand Pulling
			Monotypic Stands: Spray with post-emergent herbicide; after senescence, remove with flail mower and bag for disposal - See Section 6.3.3, Chemical Methods for Weed Removal

Table 2
Managing Strategies and Control Methods for Observed and Potentially Occurring Noxious Weeds at Lucerne Solar Project Site (Continued)

Scientific Name	Common Name	Management Strategy	Control Method
Salsola tragus; S. kali; S. pestifer	Russian thistle; tumble weed	Monitor for occurrence and eradicate if found.	***Select Occurrences:*** Pull out entire plant and root and bag for disposal - see Section 6.3.2, Physical Removal of Weeds; Hand Pulling
			Monotypic Stands: Spray with post-emergent herbicide; after senescence, remove with flail mower and bag for disposal - See Section 6.3.3, Chemical Methods for Weed Removal
Schismus arabicus, Schismus barbatus	Mediterranean-grass	No Action; allow colonization as pioneer species in revegetation areas.	***N/A***
Sisymbrium irio	London rocket	Monitor for occurrence and eradicate if found.	***Select Occurrences:*** Pull out entire plant and root and bag for disposal - see Section 6.3.2, Physical Removal of Weeds; Hand Pulling
			Monotypic Stands: Spray with post-emergent herbicide; after senescence, remove with flail mower and bag for disposal - See Section 6.3.3, Chemical Methods for Weed Removal
Solanum elaeagnifolium	white horsenettle	Monitor for occurrence and eradicate if found.	***Select Occurrences:*** Pull out entire plant and root and bag for disposal - see Section 6.3.2, Physical Removal of Weeds; Hand Pulling
			Monotypic Stands: Spray with post-emergent herbicide; after senescence, remove with flail mower and bag for disposal - See Section 6.3.3, Chemical Methods for Weed Removal
Tamarix ramosissima; Taxarix sp.	saltcedar	Monitor for occurrence and eradicate if found.	***Mature Trees:*** Cut trees and apply 100 percent herbicide to cut stem; spray new shoots - See Section 6.3.3, Chemical Methods for Weed Removal
			Saplings: Pull out entire plant and root - See Section 6.3.2, Physical Removal of Weeds

Figure 1: [illegible] Solar Vicinity Map

Figure 1: Lucerne Solar Vicinity Map

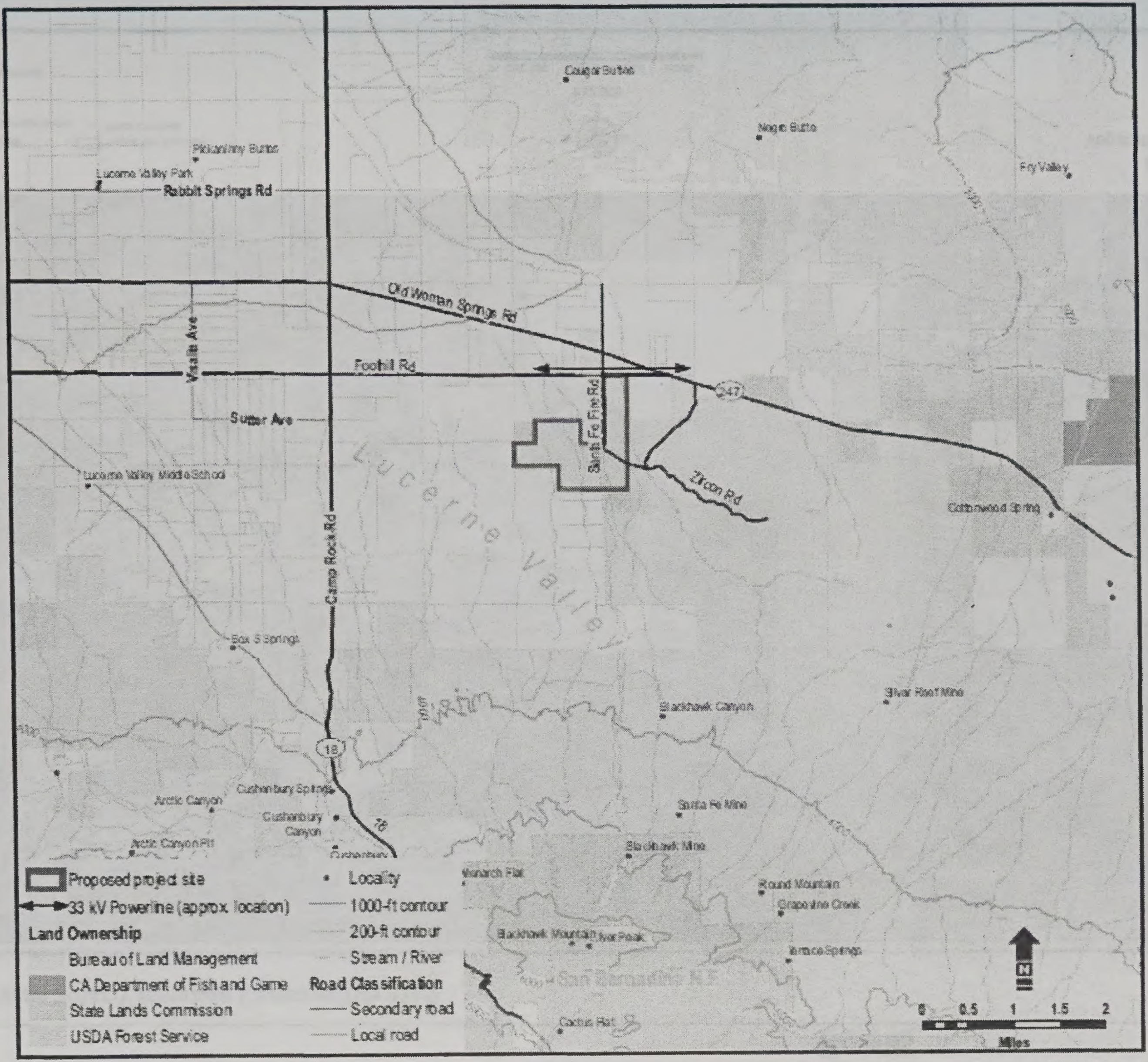
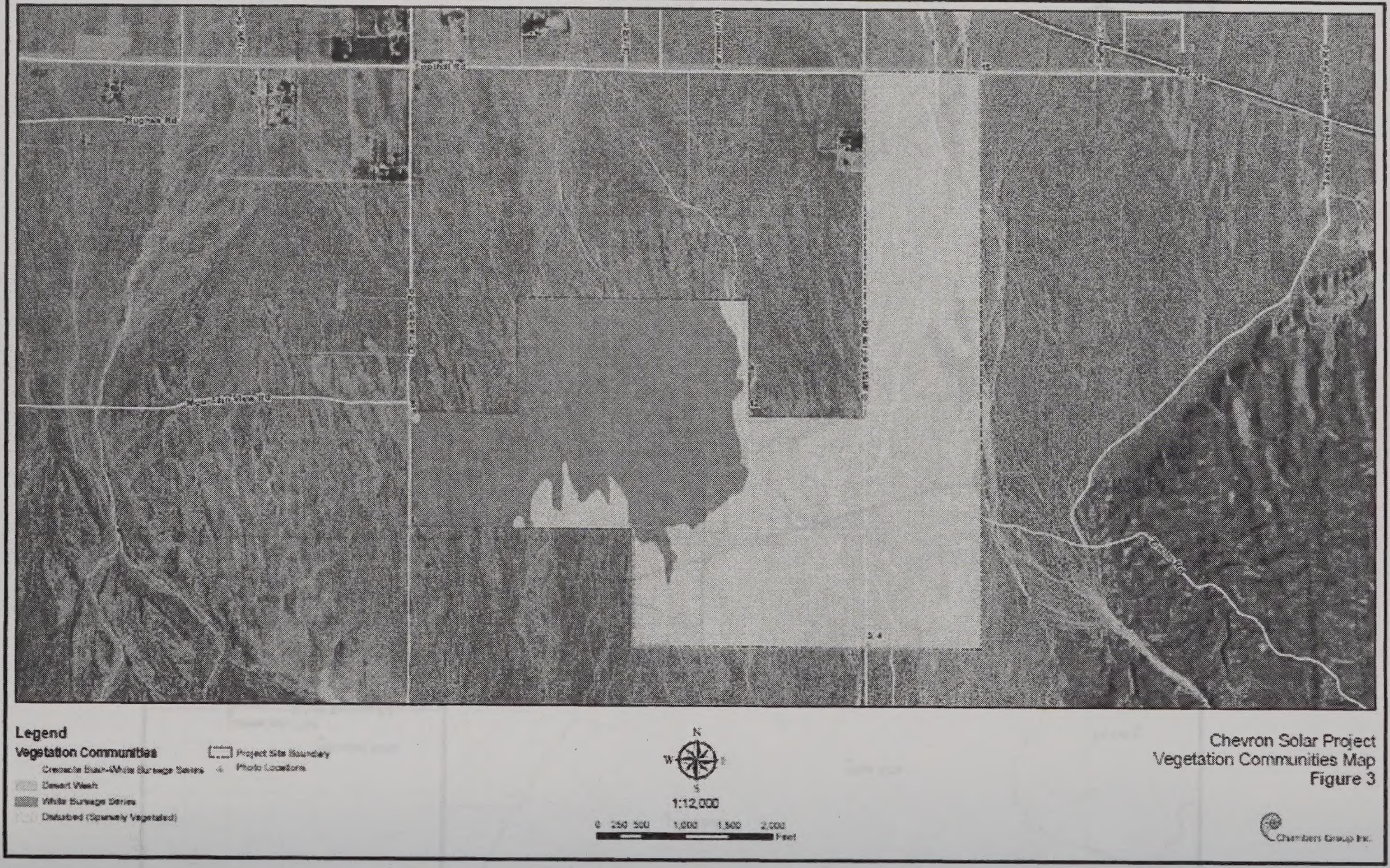


Figure 2: Lucerne Solar Vegetation Communities Map



APPENDIX A

HERBICIDE TREATMENT STANDARD OPERATING PROCEDURES

APPENDIX B

HERBICIDE TREATMENT STANDARD OPERATING PROCEDURES

This section identifies standard operating procedures (SOPs) that will be followed by the U.S. Department of the Interior Bureau of Land Management (USDI BLM) under all alternatives to ensure that risks to human health and the environment from herbicide treatment actions will be kept to a minimum. Standard operating procedures are the management controls and performance standards required for vegetation management treatments. These practices are intended to protect and enhance natural resources that could be affected by future vegetation treatments.

Prevention of Weeds and Early Detection and Rapid Response

Once weed populations become established, infestations can increase and expand in size. Weeds colonize highly disturbed ground and invade plant communities that have been degraded, but are also capable of invading intact communities. Therefore, prevention, early detection, and rapid response are the most cost-effective methods of weed control. Prevention, early detection, and rapid response strategies that reduce the need for vegetative treatments for noxious weeds should lead to a reduction in the number of acres treated using herbicides in the future by reducing or preventing weed establishment.

As stated in the BLM's *Partners Against Weeds: An Action Plan for the BLM*, prevention and public education are the highest priority weed management activities. Priorities are as follows:

- Priority 1: Take actions to prevent or minimize the need for vegetation control when and where feasible, considering the management objectives of the site.
- Priority 2: Use effective nonchemical methods of vegetation control when and where feasible.
- Priority 3: Use herbicides after considering the effectiveness of all potential methods or in combination with other methods or controls.

Prevention is best accomplished by ensuring the seeds and vegetatively reproductive plant parts of new weed species are not introduced into new areas.

The BLM is required to develop a noxious weed risk assessment when it is determined that an action may introduce or spread noxious weeds or when known habitat exists. If the risk is moderate or high, the BLM may modify the project to reduce the likelihood of weeds infesting the site, and to identify control measures to be implemented if weeds do infest the site.

To prevent the spread of weeds, the BLM takes actions to minimize the amount of existing non-target vegetation that is disturbed or destroyed during project or vegetation treatment actions (Table B-1). During project planning, the following steps are taken:

- Incorporate measures to prevent introduction or spread of weeds into project layout, design, alternative evaluation, and project decisions.
- During environmental analysis for projects and maintenance programs, assess weed risks, analyze potential treatment of high-risk sites for weed establishment and spread, and identify prevention practices.
- Determine prevention and maintenance needs, to include the use of herbicides if needed, at the onset of project planning.
- Avoid or remove sources of weed seed and propagules to prevent new weed infestations and the spread of existing weeds.

During project development, weed infestations are prioritized for treatment in project operating areas and along access routes. Weeds present on or near the site are identified, a risk assessment is completed, and weeds are controlled as necessary. Project staging areas are weed free, and travel through weed infested areas is avoided or minimized. Examples of prevention actions to be followed during project activities include cleaning all equipment and clothing before entering the project site; avoiding soil disturbance and the creation of other soil conditions that promote weed germination and establishment; and using weed-free seed, hay, mulch, gravel, soil, and mineral materials on public lands where there is a state or county program in place.

Conditions that enhance invasive species abundance should be addressed when developing mitigation and prevention plans for activities on public lands. These conditions include excessive disturbance associated with road maintenance, poor grazing management, and high levels of recreational use. If livestock grazing is managed to maintain the vigor of native perennial plants, particularly grasses, the chance of weeds invading rangeland is much less. By carefully managing recreational use and educating the public on the potential impacts of recreational activities on vegetation, the amount of damage to native vegetation and soil can be minimized at high use areas, such as campgrounds and off-highway vehicle (OHV) trails. Early detection in recreation areas is focused on roads and trails, where much of the weed spread occurs.

The BLM participates in the National Early Warning and Rapid Response System for Invasive Plants (Figure B-1). The goal of this System to minimize the establishment and spread of new invasive species through a coordinated framework of public and private processes by:

- Early detection and reporting of suspected new plant species to appropriate officials;
- Identification and vouchering of submitted specimens by designated specialists;
- Verification of suspected new state, regional, and national plant records;
- Archival of new records in designated regional and plant databases;
- Rapid assessment of confirmed new records; and
- Rapid response to verified new infestations that are determined to be invasive.

Herbicide Treatment Planning

BLM Manual 9011 (*Chemical Pest Control*) outlines the policies, and BLM Handbook H-9011-1 (*Chemical Pest Control*) outlines the procedures, for use of herbicides on public lands. As part of policy, the BLM is required to thoroughly evaluate the need for chemical treatments and their potential for impact on the environment. The BLM is required to use only U.S. Environmental Protection Agency (USEPA)-registered herbicides that have been properly evaluated under National Environmental Policy Act (NEPA), and to carefully follow label directions and additional BLM requirements.

An operational plan is developed and updated for each herbicide project. The plan includes information on project specifications, key personnel responsibilities, and communication, safety, spill response, and emergency procedures. For application of herbicides not approved for aquatic use, the plan should also specify minimum buffer widths between treatment areas and water bodies. Recommended widths are provided in BLM Handbook H-9011-1 (*Chemical Pest Control*), but actual buffers are site and herbicide active ingredient specific, and are determined based on a scientific analysis of environmental factors, such as climate, topography, vegetation, and weather; timing and method of application; and herbicide risks to humans and non-target species. Table B-2 summarizes important SOPs that should be used when applying herbicides to help protect resources of concern on public lands.

Revegetation

Disturbed areas may be reseeded or planted with desirable vegetation when the native plant community cannot recover and occupy the site sufficiently.

Determining the need for revegetation is an integral part of developing a vegetation treatment. The most important component of the process is determining whether active (seeding/planting) or passive (natural recovery) revegetation is appropriate.

U.S. Department of the Interior policy states, "Natural recovery by native plant species is preferable to planting or seeding, either of natives or non-natives. However, planting or seeding should be used only if necessary to prevent unacceptable erosion or resist competition from non-native invasive species" (620 Departmental Memorandum 3 2004). This policy is reiterated in the USDI *Burned Area Emergency Stabilization and Rehabilitation* Manual, the BLM *Burned Area Emergency Stabilization and Rehabilitation* Manual (BLM H-1742-1), and the *Interagency Burned Area Rehabilitation Guidebook*.

TABLE B-1
Prevention Measures

BLM Activity	Prevention Measure
Project Planning	• Incorporate prevention measures into project layout and design, alternative evaluation, and project decisions to prevent the introduction or spread of weeds. • Determine prevention and maintenance needs, including the use of herbicides, at the onset of project planning. • Before ground-disturbing activities begin, inventory weed infestations and prioritize areas for treatment in project operating areas and along access routes. • Remove sources of weed seed and propagules to prevent the spread of existing weeds and new weed infestations. • Pre-treat high-risk sites for weed establishment and spread before implementing projects. • Post weed awareness messages and prevention practices at strategic locations such as trailheads, roads, boat launches, and public land kiosks. • Coordinate project activities with nearby herbicide applications to maximize the cost-effectiveness of weed treatments.
Project Development	• Minimize soil disturbance to the extent practical, consistent with project objectives. • Avoid creating soil conditions that promote weed germination and establishment. • To prevent weed germination and establishment, retain native vegetation in and around project activity areas and keep soil disturbance to a minimum, consistent with project objectives. • Locate and use weed-free project staging areas. Avoid or minimize all types of travel through weed-infested areas, or restrict travel to periods when the spread of seeds or propagules is least likely. • Prevent the introduction and spread of weeds caused by moving weed-infested sand, gravel, borrow, and fill material. • Inspect material sources on site, and ensure that they are weed-free before use and transport. Treat weed-infested sources to eradicate weed seed and plant parts, and strip and stockpile contaminated material before any use of pit material. • Survey the area where material from treated weed-infested sources is used for at least 3 years after project completion to ensure that any weeds transported to the site are promptly detected and controlled. • Prevent weed establishment by not driving through weed-infested areas. • Inspect and document weed establishment at access roads, cleaning sites, and all disturbed areas; control infestations to prevent weed spread within the project area. • Avoid acquiring water for dust abatement where access to the water is through weed-infested sites. • Identify sites where equipment can be cleaned. Clean equipment before entering public lands. • Clean all equipment before leaving the project site if operating in areas infested with weeds. • Inspect and treat weeds that establish at equipment cleaning sites. • Ensure that rental equipment is free of weed seed. • Inspect, remove, and properly dispose of weed seed and plant parts found on workers' clothing and equipment. Proper disposal entails bagging the seeds and plant parts and incinerating them.
Revegetation	• Include weed prevention measures, including project inspection and documentation, in operation and reclamation plans. • Retain bonds until reclamation requirements, including weed treatments, are completed, based on inspection and documentation. • To prevent conditions favoring weed establishment, reestablish vegetation on bare ground caused by project disturbance as soon as possible using either natural recovery or artificial techniques. • Maintain stockpiled, uninfested material in a weed-free condition.

TABLE B-1 (Cont.)
Prevention Measures

BLM Activity	Prevention Measure
Revegetation (Cont.)	• Revegetate disturbed soil (except travel ways on surfaced projects) in a manner that optimizes plant establishment for each specific project site. For each project, define what constitutes disturbed soil and objectives for plant cover revegetation. Revegetation may include topsoil replacement, planting, seeding, fertilization, liming, and weed-free mulching, as necessary. • Where practical, stockpile weed-seed-free topsoil and replace it on disturbed areas (e.g., road embankments or landings). • Inspect seed and straw mulch to be used for site rehabilitation (for wattles, straw bales, dams, etc.) and certify that they are free of weed seed and propagules. • Inspect and document all limited term ground-disturbing operations in noxious weed infested areas for at least 3 growing seasons following completion of the project. • Use native material where appropriate and feasible. Use certified weed-free or weed-seed-free hay or straw where certified materials are required and/or are reasonably available. • Provide briefings that identify operational practices to reduce weed spread (for example, avoiding known weed infestation areas when locating fire lines). • Evaluate options, including closure, to regulate the flow of traffic on sites where desired vegetation needs to be established. Sites could include road and trail rights-of-way (ROW), and other areas of disturbed soils.

In addition to these handbooks and policy, use of native and non-native seed in revegetation and restoration is guided by BLM Manual 1745 (*Introduction, Transplant, Augmentation and Reestablishment of Fish, Wildlife and Plants).* This manual states that native species shall be used, unless it is determined through the NEPA process that: 1) suitable native species are not available; 2) the natural biological diversity of the proposed management area will not be diminished; 3) exotic and naturalized species can be confined within the proposed management area; 4) analysis of ecological site inventory information indicates that a site will not support reestablishment of a species that historically was part of the natural environment; or 5) resource management objectives cannot be met with native species.

When natural recovery is not feasible, revegetation can be used to stabilize and restore vegetation on disturbed sites and to eliminate or reduce the conditions that favor invasive species. Reseeding or replanting may be required when there is insufficient vegetation or seed stores to naturally revegetate the site.

To ensure revegetation success, there must be adequate soil for root development and moisture storage, which provides moisture to support the new plants. Chances for revegetation success are improved by selecting seed with high purity and percentage germination; selecting native species or cultivars adapted to the area; planting at proper depth, seeding rate, and time of the year for the region; choosing the appropriate planting method; and, where feasible, removing competing vegetation. Planting mixtures are adapted for the treatment area and site uses. A combination of forbs, perennial grasses, and shrubs is typically used on rangeland sites, while shrubs and trees might be favored for riparian and forestland sites. A mixture of several native plant species and types or functional groups enhances the value of the site for fish and wildlife and improves the health and aesthetic character of the site. Mixtures can better take advantage of variable soil, terrain, and climatic conditions, and thus are more likely to withstand insect infestations and survive adverse climatic conditions.

The USDI BLM Native Seed program was developed in response to Congressional direction to supply native plant material for emergency stabilization and longer-term rehabilitation and restoration efforts. The focus of the program is to increase the number of native plant species for which seed is available and the total amount of native seed available for these efforts. To date, the program has focused on native plant material needs of emergency stabilization and burned area rehabilitation in the Great Basin, but is expanding to focus on areas such as western Oregon, the Colorado Plateau, and most recently the Mojave Desert. The Wildland Fire Management Program funds and manages the effort.

The National Seed Warehouse is a storage facility for the native seed supply. Through a Memorandum of

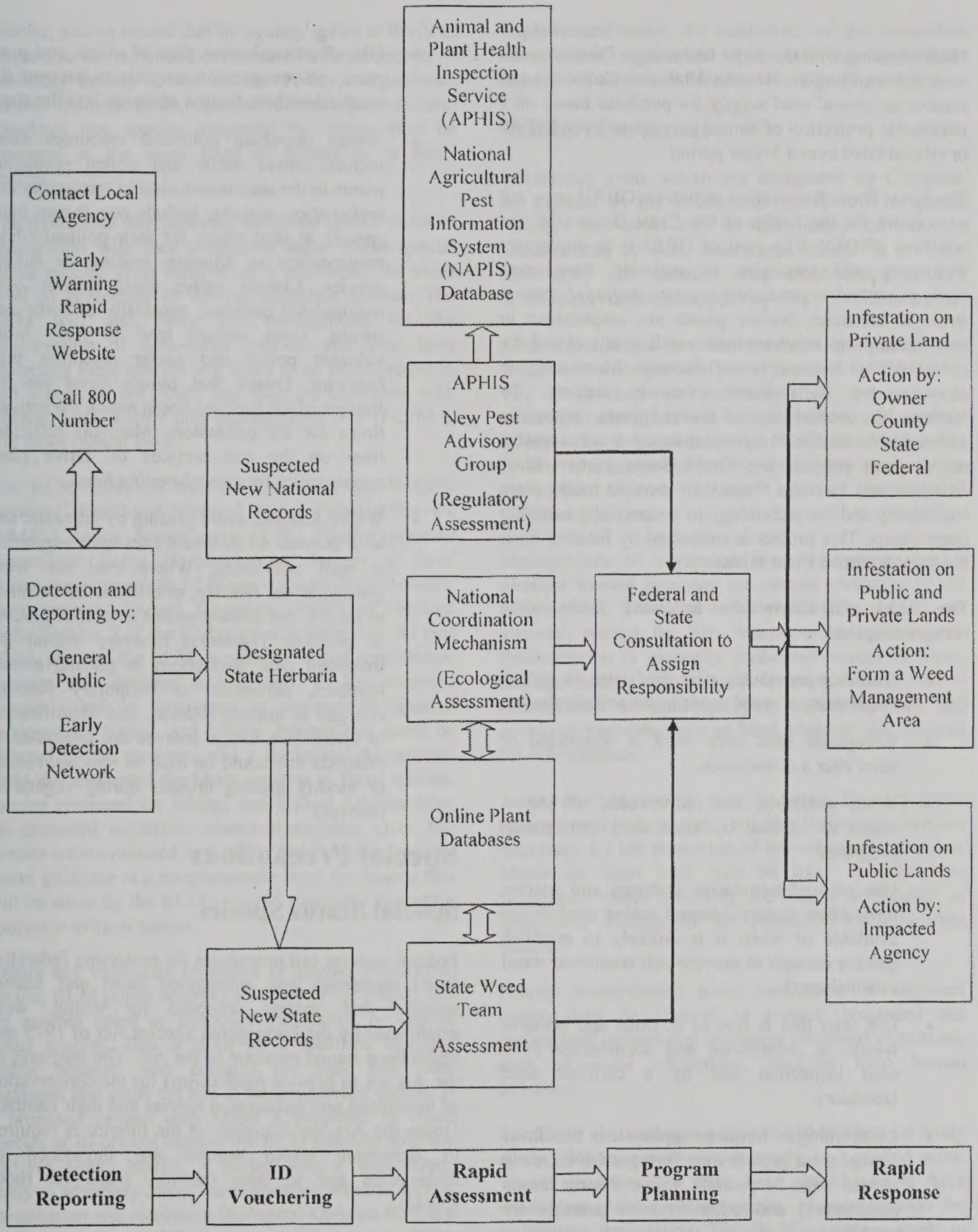

Animal and Plant Health Inspection Service (APHIS)
National Agricultural Pest Information System (NAPIS) Database
Contact Local Agency
Early Warning Rapid Response Website
Call 800 Number
APHIS
New Pest Advisory Group
(Regulatory Assessment)
Infestation on Private Land
Action by:
Owner
County
State
Federal
Suspected New National Records
Detection and Reporting by:
General Public
Early Detection Network
Designated State Herbaria
National Coordination Mechanism
(Ecological Assessment)
Federal and State Consultation to Assign Responsibility
Infestation on Public and Private Lands
Action: Form a Weed Management Area
Online Plant Databases
Infestation on Public Lands
Action by: Impacted Agency
Suspected New State Records
State Weed Team Assessment
Detection Reporting
ID Vouchering
Rapid Assessment
Program Planning
Rapid Response

Figure B-1. National Early Warning and Rapid Response System for Invasive Plants.

Understanding with the BLM Idaho State Director, each state (Idaho, Oregon, Nevada, Utah and Colorado) can reserve an annual seed supply for purchase based on a reasonable projection of annual acreage to be stabilized or rehabilitated over a 5-year period.

The Great Basin Restoration Initiative (GBRI) grew out of concern for the health of the Great Basin after the wildfires of 1999. The goal of GBRI is to implement treatments and strategies to maintain functioning ecosystems and to proactively restore degraded ones at strategic locations. Native plants are emphasized in restoration projects where their use is practical and the potential for success is satisfactory. Monitoring is recommended to measure treatment success. To increase the availability of native plants, especially native forbs, the GBRI has established a collaborative native plant project, the Great Basin Native Plant Selection and Increase Project, to increase native plant availability and the technology to successfully establish these plants. This project is supported by funding from the BLM's Native Plant Initiative.

The BLM will follow the following SOPs when revegetating sites: .

- Cultivate previously disturbed sites to reduce the amount of weed seeds in the soil seedbank.
- Revegetate sites once work is completed or soon after a disturbance.
- When available, use native seed of known origin as labeled by state seed certification programs.
- Use seed of non-native cultivars and species only when locally adapted native seed is not available or when it is unlikely to establish quickly enough to prevent soil erosion or weed establishment.
- Use seed that is free of noxious and invasive weeds, as determined and documented by a seed inspection test by a certified seed laboratory.
- Limit nitrogen fertilizer applications that favor annual grass growth over forb growth in newly seeded areas, especially where downy brome (cheatgrass) and other invasive annuals are establishing.
- Use clean equipment, free of plants and plant parts, on revegetation projects to prevent the inadvertent introduction of weeds into the site.
- Where important pollinator resources exist, include native nectar and pollen producing plants in the seed mixes used in restoration and reclamation projects. Include non-forage plant species in seed mixes for their pollinator/host relationships as foraging, nesting, or shelter species. Choose native plant species over manipulated cultivars, especially of forbs and shrubs, since natives tend to have more valuable pollen and nectar resources than cultivars. Ensure that bloom times for the flowers of the species chosen match the activity times for the pollinators. Maintain sufficient litter on the soil surfaces of native plant communities for ground-nesting bees.
- Where feasible, avoid grazing by domestic and wild animals on treatment sites until vegetation is well established. Where total rest from grazing is not feasible, efforts should be made to modify the amount and/or season of grazing to promote vegetation recovery within the treatment area. Reductions in grazing animal numbers, permanent or temporary fencing, changes in grazing rotation, and identification of alternative forage sources are examples of methods that could be used to remove, reduce or modify grazing impacts during vegetation recovery.

Special Precautions

Special Status Species

Federal policies and procedures for protecting federally-listed threatened and endangered plant and animal species, and species proposed for listing, were established by the Endangered Species Act of 1973 and regulations issued pursuant to the Act. The purposes of the Act are to provide mechanisms for the conservation of threatened and endangered species and their habitats. Under the Act, the Secretary of the Interior is required to determine which species are threatened or endangered and to issue recovery plans for those species.

Section 7 of the Act specifically requires all federal agencies to use their authorities in furtherance of the Act to carry out programs for the conservation of listed species, and to ensure that no agency action is likely to jeopardize the continued existence of a listed species or adversely modify critical habitat. Policy and guidance (BLM Manual 6840; *Special Status Species*) also stipulates that species proposed for listing must be managed at the same level of protection as listed species.

The BLM state directors may designate special status in cooperation with their respective state. These special status species must receive, at a minimum, the same level of protection as federal candidate species. The BLM will also carry out management for the conservation of state-listed species, and state laws protecting these species will apply to all BLM programs and actions to the extent that they are consistent with Federal Land Policy and Management Act (FLPMA) and other federal laws.

The BLM consulted with the U.S. Fish and Wildlife Service (UFWS) and National Marine Fisheries Service (NMFS) during development of the *Final Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (PEIS) as required under Section 7 of the Endangered Species Act. As part of this process, the BLM prepared a formal consultation package that included a description of the program; species listed as threatened or endangered, species proposed for listing, and critical habitats that could be affected by the program; and a Biological Assessment (BA) that evaluated the likely impacts to listed species, species proposed for listing, and critical habitats from the proposed vegetation treatment program. Over 300 species were evaluated in the BA. The BA also provides broad guidance at a programmatic level for actions that will be taken by the BLM to avoid adversely impacting species or critical habitat.

Before any vegetation treatment or ground disturbance occurs, BLM policy requires a survey of the project site for species listed or proposed for listing, or special status species. This is done by a qualified biologist and/or botanist who consults the state and local databases and visits the site at the appropriate season. If a proposed project may affect a proposed or listed species or its critical habitat, the BLM consults with the USFWS and/or NMFS. A project with a "may affect, likely to adversely affect" determination requires formal consultation and receives a Biological Opinion from the USFWS and/or NMFS. A project with a "may affect, not likely to adversely affect" determination requires informal consultation and receives a concurrence letter from USFWS and/or NMFS, unless that action is implemented under the authorities of the alternative consultation agreement pursuant to counterpart regulations established for *National Fire Plan* projects.

Wilderness Areas

Wilderness areas, which are designated by Congress, are defined by the Wilderness Act of 1964 as places "where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain." The BLM manages 175 Wilderness Areas encompassing over 7.2 million acres.

Activities allowed in wilderness areas are identified in wilderness management plans prepared by the BLM. The BLM does not ordinarily treat vegetation in wilderness areas, but will control invasive and noxious weeds when they threaten lands outside wilderness area or are spreading within the wilderness and can be controlled without serious adverse impacts to wilderness values.

Management of vegetation in a wilderness area is directed toward retaining the natural character of the environment. Tree and shrub removal is usually not allowed, except for fire, insect, or disease control. Reforestation is generally prohibited except to repair damage caused by humans in areas where natural reforestation is unlikely. Only native species and primitive methods, such as hand planting, are allowed for reforestation.

Tools and equipment may be used for vegetation management when they are the minimum amount necessary for the protection of the wilderness resource. Motorized tools may only be used in special or emergency cases involving the health and safety of wilderness visitors, or the protection of wilderness values.

Habitat manipulation using mechanical or chemical means may be allowed to protect threatened and endangered species and to correct unnatural conditions, such as weed infestations, resulting from human influence.

The BLM also manages a total of 610 Wilderness Study Areas (WSAs) encompassing nearly 14.3 million acres. These are areas that have been determined to have wilderness characteristics worthy of consideration for wilderness designation. The BLM's primary goals in WSAs are to manage them so as to not impair their wilderness values and to maintain their suitability for preservation as wilderness until Congress makes a determination on their future.

In WSAs, the BLM must foster a natural distribution of native species of plants and animals by ensuring that ecosystems and processes continue to function naturally.

Cultural Resources

The effects of BLM actions on cultural resources are addressed through compliance with the National Historic Preservation Act, as implemented through a national Programmatic Agreement (*Programmatic Agreement among the Bureau of Land Management, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers Regarding the Manner in Which BLM Will Meet Its Responsibilities Under the National Historic Preservation Act*) and state-specific protocol agreements with State Historic Preservation Officers (SHPOs). The BLM's responsibilities under these authorities are addressed as early in the vegetation management project planning process as possible.

The BLM meets its responsibilities for consultation and government-to-government relationships with Native American tribes by consulting with appropriate tribal representatives prior to taking actions that affect tribal interests. The BLM's tribal consultation policies are detailed in BLM Manual 8120 (*Tribal Consultation Under Cultural Resource Authorities)* and Handbook H-8120-1 (*Guidelines for Conducting Tribal Consultation).* The BLM consulted with Native American tribes and Alaska Native groups during development of the PEIS. Information gathered on important tribal resources and potential impacts to these resources from herbicide treatments is presented in the analysis of impacts.

When conducting vegetation treatments, field office personnel consult with relevant parties (including tribes, native groups, and SHPOs), assess the potential of the proposed treatment to affect cultural and subsistence resources, and devise inventory and protection strategies suitable to the types of resources present and the potential impacts to them.

Herbicide treatments, for example, are unlikely to affect buried cultural resources, but might have a negative effect on traditional cultural properties comprised of plant foods or materials significant to local tribes and native groups. These treatments require inventory and protection strategies that reflect the different potential of each treatment to affect various types of cultural resources.

Impacts to significant cultural resources are avoided through project redesign or are mitigated through data recovery, recordation, monitoring, or other appropriate measures. When cultural resources are discovered during vegetation treatment, appropriate actions are taken to protect these resources.

TABLE B-2
Standard Operating Procedures for Applying Herbicides

Resource Element	Standard Operating Procedure
Guidance Documents	BLM Handbook H-9011-1 (*Chemical Pest Control*); and manuals 1112 (*Safety*), 9011 (*Chemical Pest Control*), 9012 (*Expenditure of Rangeland Insect Pest Control Funds*), 9015 (*Integrated Weed Management*), and 9220 (*Integrated Pest Management*).
General	• Prepare operational and spill contingency plan in advance of treatment. • Conduct a pretreatment survey before applying herbicides. • Select herbicide that is least damaging to the environment while providing the desired results. • Select herbicide products carefully to minimize additional impacts from degradates, adjuvants, inert ingredients, and tank mixtures. • Apply the least amount of herbicide needed to achieve the desired result. • Follow herbicide product label for use and storage. • Have licensed applicators apply herbicides. • Use only USEPA-approved herbicides and follow product label directions and "advisory" statements. • Review, understand, and conform to the "Environmental Hazards" section on the herbicide product label. This section warns of known pesticide risks to the environment and provides practical ways to avoid harm to organisms or to the environment. • Consider surrounding land use before assigning aerial spraying as a treatment method and avoid aerial spraying near agricultural or densely populated areas. • Minimize the size of application area, when feasible. • Comply with herbicide-free buffer zones to ensure that drift will not affect crops or nearby residents/landowners. • Post treated areas and specify reentry or rest times, if appropriate. • Notify adjacent landowners prior to treatment. • Keep a copy of Material Safety Data Sheets (MSDSs) at work sites. MSDSs are available for review at http://www.cdms.net/. • Keep records of each application, including the active ingredient, formulation, application rate, date, time, and location. • Avoid accidental direct spray and spill conditions to minimize risks to resources. • Consider surrounding land uses before aerial spraying. • Avoid aerial spraying during periods of adverse weather conditions (snow or rain imminent, fog, or air turbulence). • Make helicopter applications at a target airspeed of 40 to 50 miles per hour (mph), and at about 30 to 45 feet above ground. • Take precautions to minimize drift by not applying herbicides when winds exceed >10 mph (>6 mph for aerial applications), or a serious rainfall event is imminent. • Use drift control agents and low volatile formulations. • Conduct pre-treatment surveys for sensitive habitat and special status species within or adjacent to proposed treatment areas. • Consider site characteristics, environmental conditions, and application equipment in order to minimize damage to non-target vegetation. • Use drift reduction agents, as appropriate, to reduce the drift hazard to non-target species. • Turn off applied treatments at the completion of spray runs and during turns to start another spray run. • Refer to the herbicide product label when planning revegetation to ensure that subsequent vegetation would not be injured following application of the herbicide. • Clean OHVs to remove seeds.

TABLE B-2 (Cont.)
Standard Operating Procedures for Applying Pesticides

Resource Element	Standard Operating Procedure
Air Quality See Manual 7000 (*Soil, Water, and Air Management*)	• Consider the effects of wind, humidity, temperature inversions, and heavy rainfall on herbicide effectiveness and risks. • Apply herbicides in favorable weather conditions to minimize drift. For example, do not treat when winds exceed 10 mph (>6 mph for aerial applications) or rainfall is imminent. • Use drift reduction agents, as appropriate, to reduce the drift hazard. • Select proper application equipment (e.g., spray equipment that produces 200- to 800-micron diameter droplets [spray droplets of 100 microns and less are most prone to drift]). • Select proper application methods (e.g., set maximum spray heights, use appropriate buffer distances between spray sites and non-target resources).
Soil See Manual 7000 (*Soil, Water, and Air Management*)	• Minimize treatments in areas where herbicide runoff is likely, such as steep slopes when heavy rainfall is expected. • Minimize use of herbicides that have high soil mobility, particularly in areas where soil properties increase the potential for mobility. • Do not apply granular herbicides on slopes of more than 15% where there is the possibility of runoff carrying the granules into non-target areas.
Water Resources See Manual 7000 (*Soil, Water, and Air Management*)	• Consider climate, soil type, slope, and vegetation type when developing herbicide treatment programs. • Select herbicide products to minimize impacts to water. This is especially important for application scenarios that involve risk from active ingredients in a particular herbicide, as predicted by risk assessments. • Use local historical weather data to choose the month of treatment. Considering the phenology of the target species, schedule treatments based on the condition of the water body and existing water quality conditions. • Plan to treat between weather fronts (calms) and at appropriate time of day to avoid high winds that increase water movements, and to avoid potential stormwater runoff and water turbidity. • Review hydrogeologic maps of proposed treatment areas. Note depths to groundwater and areas of shallow groundwater and areas of surface water and groundwater interaction. Minimize treating areas with high risk for groundwater contamination. • Conduct mixing and loading operations in an area where an accidental spill would not contaminate an aquatic body. • Do not rinse spray tanks in or near water bodies. Do not broadcast pellets where there is danger of contaminating water supplies. • Maintain buffers between treatment areas and water bodies. Buffer widths should be developed based on herbicide- and site-specific criteria to minimize impacts to water bodies. • Minimize the potential effects to surface water quality and quantity by stabilizing terrestrial areas as quickly as possible following treatment.
Wetlands and Riparian Areas	• Use a selective herbicide and a wick or backpack sprayer. • Use appropriate herbicide-free buffer zones for herbicides not labeled for aquatic use based on risk assessment guidance, with minimum widths of 100 feet for aerial, 25 feet for vehicle, and 10 feet for hand spray applications.
Vegetation See Handbook H-4410-1 (*National Range Handbook*), and manuals 5000 (*Forest Management*) and 9015 (*Integrated Weed Management*)	• Refer to the herbicide label when planning revegetation to ensure that subsequent vegetation would not be injured following application of the herbicide. • Use native or sterile species for revegetation and restoration projects to compete with invasive species until desired vegetation establishes. • Use weed-free feed for horses and pack animals. Use weed-free straw and mulch for revegetation and other activities. • Identify and implement any temporary domestic livestock grazing and/or supplemental feeding restrictions needed to enhance desirable vegetation recovery following treatment. Consider adjustments in the existing grazing permit, to maintain desirable vegetation on the treatment site.

TABLE B-2 (Cont.)
Standard Operating Procedures for Applying Pesticides

Resource Element	Standard Operating Procedure
Pollinators	• Complete vegetation treatments seasonally before pollinator foraging plants bloom. • Time vegetation treatments to take place when foraging pollinators are least active both seasonally and daily. • Design vegetation treatment projects so that nectar and pollen sources for important pollinators and resources are treated in patches rather than in one single treatment. • Minimize herbicide application rates. Use typical rather than maximum rates where there are important pollinator resources. • Maintain herbicide free buffer zones around patches of important pollinator nectar and pollen sources. • Maintain herbicide free buffer zones around patches of important pollinator nesting habitat and hibernacula. • Make special note of pollinators that have single host plant species, and minimize herbicide spraying on those plants (if invasive species) and in their habitats.
Fish and Other Aquatic Organisms See manuals 6500 (*Wildlife and Fisheries Management*) and 6780 (*Habitat Management Plans*)	• Use appropriate buffer zones based on label and risk assessment guidance. • Minimize treatments near fish-bearing water bodies during periods when fish are in life stages most sensitive to the herbicide(s) used, and use spot rather than broadcast or aerial treatments. • Use appropriate application equipment/method near water bodies if the potential for off-site drift exists. • For treatment of aquatic vegetation, 1) treat only that portion of the aquatic system necessary to achieve acceptable vegetation management, 2) use the appropriate application method to minimize the potential for injury to desirable vegetation and aquatic organisms, and 3) follow water use restrictions presented on the herbicide label.
Wildlife See manuals 6500 (*Wildlife and Fisheries Management*) and 6780 (*Habitat Management Plans*)	• Use herbicides of low toxicity to wildlife, where feasible. • Use spot applications or low-boom broadcast operations where possible to limit the probability of contaminating non-target food and water sources, especially non-target vegetation over areas larger than the treatment area. • Use timing restrictions (e.g., do not treat during critical wildlife breeding or staging periods) to minimize impacts to wildlife.
Threatened, Endangered, and Sensitive Species See Manual 6840 (*Special Status Species*)	• Survey for special status species before treating an area. Consider effects to special status species when designing herbicide treatment programs. • Use a selective herbicide and a wick or backpack sprayer to minimize risks to special status plants. • Avoid treating vegetation during time-sensitive periods (e.g., nesting and migration, sensitive life stages) for special status species in area to be treated.
Livestock See Handbook H-4120-1 (*Grazing Management*)	• Whenever possible and whenever needed, schedule treatments when livestock are not present in the treatment area. Design treatments to take advantage of normal livestock grazing rest periods, when possible. • As directed by the herbicide product label, remove livestock from treatment sites prior to herbicide application, where applicable. • Use herbicides of low toxicity to livestock, where feasible. • Take into account the different types of application equipment and methods, where possible, to reduce the probability of contamination of non-target food and water sources. • Avoid use of diquat in riparian pasture while pasture is being used by livestock. • Notify permittees of the herbicide treatment project to improve coordination and avoid potential conflicts and safety concerns during implementation of the treatment. • Notify permittees of livestock grazing, feeding, or slaughter restrictions, if necessary. • Provide alternative forage sites for livestock, if possible.

TABLE B-2 (Cont.)
Standard Operating Procedures for Applying Pesticides

Resource Element	Standard Operating Procedure
Wild Horses and Burros	• Minimize using herbicides in areas grazed by wild horses and burros. • Use herbicides of low toxicity to wild horses and burros, where feasible. • Remove wild horses and burros from identified treatment areas prior to herbicide application, in accordance with herbicide product label directions for livestock. • Take into account the different types of application equipment and methods, where possible, to reduce the probability of contaminating non-target food and water sources.
Cultural Resources and Paleontological Resources See handbooks H-8120-1 (*Guidelines for Conducting Tribal Consultation*) and H-8270-1 (*General Procedural Guidance for Paleontological Resource Management*), and manuals 8100 (*The Foundations for Managing Cultural Resources*), 8120 (*Tribal Consultation Under Cultural Resource Authorities*), and 8270 (*Paleontological Resource Management*) See also: *Programmatic Agreement among the Bureau of Land Management, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers Regarding the Manner in Which BLM Will Meet Its Responsibilities Under the National Historic Preservation Act*	• Follow standard procedures for compliance with Section 106 of the National Historic Preservation Act as implemented through the *Programmatic Agreement among the Bureau of Land Management, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers Regarding the Manner in Which BLM Will Meet Its Responsibilities Under the National Historic Preservation Act* and state protocols or 36 Code of Federal Regulations Part 800, including necessary consultations with State Historic Preservation Officers and interested tribes. • Follow BLM Handbook H-8270-1 (*General Procedural Guidance for Paleontological Resource Management*) to determine known Condition 1 and Condition 2 paleontological areas, or collect information through inventory to establish Condition 1 and Condition 2 areas, determine resource types at risk from the proposed treatment, and develop appropriate measures to minimize or mitigate adverse impacts. • Consult with tribes to locate any areas of vegetation that are of significance to the tribe and that might be affected by herbicide treatments. • Work with tribes to minimize impacts to these resources. • Follow guidance under Human Health and Safety in the PEIS in areas that may be visited by Native peoples after treatments.
Visual Resources See handbooks H-8410-1 (*Visual Resource Inventory*) and H-8431-1 (*Visual Resource Contrast Rating*), and manual 8400 (*Visual Resource Management*)	• Minimize the use of broadcast foliar applications in sensitive watersheds to avoid creating large areas of browned vegetation. • Consider the surrounding land use before assigning aerial spraying as an application method. • Minimize off-site drift and mobility of herbicides (e.g., do not treat when winds exceed 10 mph; minimize treatment in areas where herbicide runoff is likely; establish appropriate buffer widths between treatment areas and residences) to contain visual changes to the intended treatment area. • If the area is a Class I or II visual resource, ensure that the change to the characteristic landscape is low and does not attract attention (Class I), or if seen, does not attract the attention of the casual viewer (Class II). • Lessen visual impacts by: 1) designing projects to blend in with topographic forms; 2) leaving some low-growing trees or planting some low-growing tree seedlings adjacent to the treatment area to screen short-term effects; and 3) revegetating the site following treatment. • When restoring treated areas, design activities to repeat the form, line, color, and texture of the natural landscape character conditions to meet established Visual Resource Management (VRM) objectives.

TABLE B-2 (Cont.)
Standard Operating Procedures for Applying Pesticides

Resource Element	Standard Operating Procedure
Wilderness and Other Special Areas See handbooks H-8550-1 (*Management of Wilderness Study Areas (WSAs)*), and H-8560-1 (*Management of Designated Wilderness Study Areas*), and Manual 8351 (*Wild and Scenic Rivers*)	• Encourage backcountry pack and saddle stock users to feed their livestock only weed-free feed for several days before entering a wilderness area. • Encourage stock users to tie and/or hold stock in such a way as to minimize soil disturbance and loss of native vegetation. • Revegetate disturbed sites with native species if there is no reasonable expectation of natural regeneration. • Provide educational materials at trailheads and other wilderness entry points to educate the public on the need to prevent the spread of weeds. • Use the "minimum tool" to treat noxious and invasive vegetation, relying primarily on the use of ground-based tools, including backpack pumps, hand sprayers, and pumps mounted on pack and saddle stock. • Use chemicals only when they are the minimum method necessary to control weeds that are spreading within the wilderness or threaten lands outside the wilderness. • Give preference to herbicides that have the least impact on non-target species and the wilderness environment. • Implement herbicide treatments during periods of low human use, where feasible. • Address wilderness and special areas in management plans. • Maintain adequate buffers for Wild and Scenic Rivers (¼ mile on either side of river, ½ mile in Alaska).
Recreation See Handbook H-1601-1 (*Land Use Planning Handbook, Appendix C*)	• Schedule treatments to avoid peak recreational use times, while taking into account the optimum management period for the targeted species. • Notify the public of treatment methods, hazards, times, and nearby alternative recreation areas. • Adhere to entry restrictions identified on the herbicide product label for public and worker access. • Post signs noting exclusion areas and the duration of exclusion, if necessary. • Use herbicides during periods of low human use, where feasible.
Social and Economic Values	• Consider surrounding land use before selecting aerial spraying as a method, and avoid aerial spraying near agricultural or densely-populated areas. • Post treated areas and specify reentry or rest times, if appropriate. • Notify grazing permittees of livestock feeding restrictions in treated areas, if necessary, as per herbicide product label instructions. • Notify the public of the project to improve coordination and avoid potential conflicts and safety concerns during implementation of the treatment. • Control public access until potential treatment hazards no longer exist, per herbicide product label instructions. • Observe restricted entry intervals specified by the herbicide product label. • Notify local emergency personnel of proposed treatments. • Use spot applications or low-boom broadcast applications where possible to limit the probability of contaminating non-target food and water sources, especially vegetation over areas larger than the treatment area. • Consult with Native American tribes and Alaska Native groups to locate any areas of vegetation that are of significance to the tribes and Native groups and that might be affected by herbicide treatments. • To the degree possible within the law, hire local contractors and workers to assist with herbicide application projects and purchase materials and supplies, including chemicals, for herbicide treatment projects through local suppliers. • To minimize fears based on lack of information, provide public educational information on the need for vegetation treatments and the use of herbicides in an integrated pest management program for projects proposing local use of herbicides.

TABLE B-2 (Cont.)
Standard Operating Procedures for Applying Pesticides

Resource Element	Standard Operating Procedure
Rights-of-way	• Coordinate vegetation management activities where joint or multiple use of a ROW exists. • Notify other public land users within or adjacent to the ROW proposed for treatment. • Use only herbicides that are approved for use in ROW areas.
Human Health and Safety	• Establish a buffer between treatment areas and human residences based on guidance given in the HHRA, with a minimum buffer of ¼ mile for aerial applications and 100 feet for ground applications, unless a written waiver is granted. • Use protective equipment as directed by the herbicide product label. • Post treated areas with appropriate signs at common public access areas. • Observe restricted entry intervals specified by the herbicide product label. • Provide public notification in newspapers or other media where the potential exists for public exposure. • Have a copy of MSDSs at work site. • Notify local emergency personnel of proposed treatments. • Contain and clean up spills and request help as needed. • Secure containers during transport. • Follow label directions for use and storage. • Dispose of unwanted herbicides promptly and correctly.

APPENDIX B

HERBICIDES APPROVED FOR USE ON PUBLIC LANDS IN CALIFORNIA

*Herbicides Approved for Use on BLM Lands**

Update October 10, 2008

ACTIVE INGREDIENT	STATES WITH APPROVAL BASED UPON CURRENT EIS/ROD & COURT INJUNCTIONS	TRADE NAME	MANUFACTURER	EPA REG. NUMBER	CA REG. **
Bromacil	AK, AZ, CA, CO, ID, MT, ND,	Bromacil 80DF	Alligare, LLC	81927-4	Y
	NE, NM, NV, OK, SD, TX, UT,	Hyvar X	DuPont	352-287	Y
	WA, WY	Hyvar XL	DuPont	352-346	Y
Bromacil +	AK, AZ, CA, CO, ID, MT, ND,	Bromacil/Diuron 40/40	Alligare, LLC	81927-3	Y
Diuron	NE, NM, NV, OK, SD, TX, UT,	Krovar I DF	DuPont	352-505	Y
	WA, WY	Weed Blast Res. Weed Cont.	Loveland Products Inc.	34704-576	N
		DiBro 2+2	Nufarm Americas Inc.	228-227	Y
		DiBro 4+4	Nufarm Americas Inc.	228-235	N
		DiBro 4+2	Nufarm Americas Inc.	228-386	N
		Weed Blast 4G	SSI Maxim	34913-19	N
Chlorsulfuron	AK, AZ, CA, CO, ID, MT, ND,	Telar DF	DuPont	352-522	Y
	NE, NM, NV, OK, SD, TX, UT,	Telar XP	DuPont	352-654	Y
	WA, WY				
Clopyralid	AK, AZ, CA, CO, ID, MT, ND,	Spur	Albaugh, Inc.	42750-89	N
	NE, NM, NV, OK, SD, TX, UT,	Pyramid R&P	Albaugh, Inc.	42750-94	N
	WA, WY	Clopyralid 3	Alligare, LLC	42750-94-81927	Y
		Cody Herbicide	Alligare, LLC	81927-28	Y
		Reclaim	Dow AgroSciences	62719-83	N
		Stinger	Dow AgroSciences	62719-73	Y
		Transline	Dow AgroSciences	62719-259	Y
		CleanSlate	Nufarm Americas Inc.	228-491	Y
Clopyralid +	AK, AZ, CA, CO, ID, MT, ND,	Curtail	Dow AgroSciences	62719-48	N
2,4-D	NE, NM, NV, OK, SD, TX, UT,	Commando	Albaugh, Inc.	42750-92	N
	WA, WY				

ACTIVE INGREDIENT	STATES WITH APPROVAL BASED UPON CURRENT EIS/ROD & COURT INJUNCTIONS	TRADE NAME	MANUFACTURER	EPA REG. NUMBER	CA REG. **
2,4-D	AK, AZ, CA, CO, ID, MT, ND, NE, NM, NV, OK, OR, SD, TX, UT, WA, WY	Agrisolution 2,4-D LV6	Agriliance, L.L.C.	1381-101	N
		Agrisolution 2,4-D Amine 4	Agriliance, L.L.C.	1381-103	N
		Agrisolution 2,4-D LV4	Agriliance, L.L.C.	1381-102	N
		2,4-D Amine 4	Albaugh, Inc./Agri Star	42750-19	Y
		2,4-D LV 4	Albaugh, Inc /Agri Star	42750-15	Y
		Solve 2,4-D	Albaugh, Inc /Agri Star	42750-22	Y
		2,4-D LV 6	Albaugh, Inc /Agri Star	42750-20	N
		Five Star	Albaugh, Inc /Agri Star	42750-49	N
		D-638	Albaugh, Inc /Agri Star	42750-36	N
		2,4-D LV6	Helena Chem. Co.	4275-20-5905	N
		2,4-D Amine	Helena Chem. Co	5905-72	N
		Opti-Amine	Helena Chem. Co.	5905-501	N
		Barrage HF	Helena	5905-529	N
		HardBall	Helena	5905-549	N
		Unison	Helena	5905-542	N
		Amine 4CA 2,4-D Weed Killer	Loveland Products Inc.	34704-5	Y
		Clean Amine	Loveland Products Inc.	34704-120	N
		Low Vol 4 Ester Weed Killer	Loveland Products Inc.	34704-124	N
		Low Vol 6 Ester Weed Killer	Loveland Products Inc	34704-125	N
		LV-6 Ester Weed Killer	Loveland Products Inc	34704-6	Y
		Saber	Loveland Products Inc	34704-803	N
		Saber CA	Loveland Products Inc	34704-803	Y
		Salvo	Loveland Products Inc	34704-609	N
		Savage DF	Loveland Products Inc	34704-606	Y
		Aqua-Kleen	NuFarm Americas Inc.	71368-4	N
		Esteron 99C	NuFarm Americas Inc.	62719-9-71368	N
		Weedar 64	NuFarm Americas Inc.	71368-1	Y
		Weedone LV-4	NuFarm Americas Inc	228-139-71368	Y
		Weedone LV-4 Solventless	NuFarm Americas Inc	71368-14	Y
		Weedone LV-6	NuFarm Americas Inc.	71368-11	Y
		Formula 40	Nufarm Americas Inc	228-357	Y
		2,4-D LV 6 Ester	Nufarm Americas Inc.	228-95	Y
		Platoon	Nufarm Americas Inc.	228-145	N

ACTIVE INGREDIENT	STATES WITH APPROVAL BASED UPON CURRENT EIS/ROD & COURT INJUNCTIONS	TRADE NAME	MANUFACTURER	EPA REG. NUMBER	CA REG. **
2,4-D - cont.	AK, AZ, CA, CO, ID, MT, ND, NE, NM, NV, OK, OR, SD, TX, UT, WA, WY	WEEDstroy AM-40	Nufarm Americas Inc.	228-145	Y
		Hi-Dep	PBI Gordon Corp	2217-703	N
		2,4-D Amine	Setre (Helena)	5905-72	N
		Barrage LV Ester	Setre (Helena)	5905-504	N
		2,4-D LV4	Setre (Helena)	5905-90	N
		2,4-D LV6	Setre (Helena)	5905-93	N
		Clean Crop Amine 4	UAP-Platte Chem. Co	34704-5 CA	Y
		Clean Crop Low Vol 6 Ester	UAP-Platte Chem. Co	34704-125	N
		Salvo LV Ester	UAP-Platte Chem. Co.	34704-609	N
		2,4-D 4# Amine Weed Killer	UAP-Platte Chem. Co	34704-120	N
		Clean Crop LV-4 ES	UAP-Platte Chem. Co.	34704-124	N
		Savage DF	UAP-Platte Chem. Co	34704-606	Y
		Cornbelt 4 lb. Amine	Van Diest Supply Co.	11773-2	N
		Cornbelt 4# LoVol Ester	Van Diest Supply Co.	11773-3	N
		Cornbelt 6# LoVol Ester	Van Diest Supply Co.	11773-4	N
		Amine 4	Wilbur-Ellis Co.	2935-512	N
		Lo Vol-4	Wilbur-Ellis Co.	228-139-2935	N
		Lo Vol-6 Ester	Wilbur-Ellis Co.	228-95-2935	N
		Agrisolution 2,4-D LV6	Winflied Solutions, LLC	1381-101	N
		Agrisolution 2,4-D Amine 4	Winfield Solutions, LLC	1381-103	N
		Agrisolution 2,4-D LV4	Winfield Solutions, LLC	1381-102	N
Dicamba	AK, AZ, CA, CO, ID, MT, ND, NE, NM, NV, OK, OR, SD, TX, UT, WA, WY	Dicamba DMA	Albaugh. Inc./Agri Star	42750-40	N
		Vision	Albaugh. Inc	42750-98	N
		Cruise Control	Alligare, LLC	42750-40-81927	N
		Banvel	Arysta LifeScience N.A. Corp.	66330-276	Y
		Clarity	BASF Ag. Products	7969-137	Y
		Rifle	Loveland Products Inc.	34704-861	Y
		Banvel	Micro Flo Company	51036-289	Y
		Diablo	Nufarm Americas Inc.	228-379	Y
		Vanquish Herbicide	Nufarm Americas Inc	228-397	Y
		Vanquish	Syngenta	100-884	N

ACTIVE INGREDIENT	STATES WITH APPROVAL BASED UPON CURRENT EIS/ROD & COURT INJUNCTIONS	TRADE NAME	MANUFACTURER	EPA REG. NUMBER	CA REG. **
Dicamba + 2,4-D	AK, AZ, CA, CO, ID, MT, ND, NE, NM, NV, OK, OR, SD, TX, UT, WA, WY	Outlaw	Albaugh, Inc./Agri Star	42750-68	N
		Range Star	Albaugh, Inc./Agri Star	42750-55	N
		Weedmaster	BASF Ag. Products	7969-133	Y
		Rifle-D	Loveland Products Inc.	34704-869	N
		KambaMaster	Nufarm Americas Inc.	71368-34	N
		Veteran 720	Nufarm Americas Inc.	228-295	Y
Dicamba + Diflufenzopyr	AZ, CO, ID, MT, ND, NE, NM, NV, OK, SD, TX, UT, WA, WY	Distinct	BASF Ag. Products	7969-150	N
		Overdrive	BASF Ag. Products	7969-150	N
NOTE: In accordance with the Record of Decision for the *Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (PEIS), the aerial application of these herbicides is prohibited.					
Diquat	AK, AZ, CA, CO, ID, MT, ND, NE, NM, NV, OK, SD, TX, UT, WA, WY	Reward	Syngenta Crop Prot., Inc.	100-1091	Y
Diuron	AK, AZ, CA, CO, ID, MT, ND, NE, NM, NV, OK, SD, TX, UT, WA, WY	Diuron 80DF	Agriliance, L.L.C.	9779-318	N
		Diuron 80DF	Alligare, LLC	81927-12	Y
		Karmex DF	DuPont	352-692	Y
		Karmex XP	DuPont	352-692	Y
		Karmex IWC	DuPont	352-692	Y
		Direx 4L	DuPont	352-678	Y
		Direx 80DF	Griffin Company	1812-362	Y
		Direx 4L	Griffin Company	1812-257	Y
		Diuron 4L	Loveland Products Inc.	34704-854	Y
		Diuron 80 WDG	Loveland Products Inc.	34704-648	N
		Diuron 4L	Makteshim Agan of N.A.	66222-54	N
		Diuron 80WDG	UAP-Platte Chem. Co.	34704-648	N
		Vegetation Man. Diuron 80 DF	Vegetation Man., LLC	66222-51-74477	N
		Diuron-DF	Wilbur-Ellis	00352-00-508-02935	N
		Diuron 80DF	Winfield Solutions, LLC	9779-318	N

ACTIVE INGREDIENT	STATES WITH APPROVAL BASED UPON CURRENT EIS/ROD & COURT INJUNCTIONS	TRADE NAME	MANUFACTURER	EPA REG. NUMBER	CA REG. **
Fluridone	AK, AZ, CA, CO, ID, MT, ND, NE, NM, NV, OK, SD, TX, UT, WA, WY	Avast!	SePRO	67690-30	Y
		Sonar AS	SePRO	67690-4	Y
		Sonar Precision Release	SePRO	67690-12	Y
		Sonar Q	SePRO	67690-3	Y
		Sonar SRP	SePRO	67690-3	Y
Glyphosate	AK, AZ, CA, CO, ID, MT, ND, NE, NM, NV, OK, OR, SD, TX, UT, WA, WY	Aqua Star	Albaugh, Inc./Agri Star	42750-59	Y
		Forest Star	Albaugh, Inc./Agri Star	42570-61	Y
		Gly Star Original	Albaugh, Inc./Agri Star	42750-60	Y
		Gly Star Plus	Albaugh, Inc./Agri Star	42750-61	Y
		Gly Star Pro	Albaugh, Inc./Agri Star	42750-61	Y
		Glyphosate 4 PLUS	Alligare, LLC	81927-9	Y
		Glyphosate 5.4	Alligare, LLC	81927-8	Y
		Glyfos	Cheminova	4787-31	Y
		Glyfos PRO	Cheminova	67760-57	Y
		Glyfos Aquatic	Cheminova	4787-34	Y
		ClearOut 41	Chem. Prod. Tech., LLC	70829-2	N
		ClearOut 41 Plus	Chem. Prod. Tech., LLC	70829-3	N
		Accord Concentrate	Dow AgroSciences	62719-324	Y
		Accord SP	Dow AgroSciences	62719-322	Y
		Accord XRT	Dow AgroSciences	62719-517	Y
		Accord XRT II	Dow AgroSciences	62719-556	Y
		Glypro	Dow AgroSciences	62719-324	Y
		Glypro Plus	Dow AgroSciences	62719-322	Y
		Rodeo	Dow AgroSciences	62719-324	Y
		Mirage	Loveland Products Inc	34704-889	Y
		Mirage Plus	Loveland Products Inc	34704-890	Y
		Aquamaster	Monsanto	524-343	Y
		Roundup Original	Monsanto	524-445	Y
		Roundup Original II	Monsanto	524-454	Y
		Roundup Original II CA	Monsanto	524-475	Y
		Honcho	Monsanto	524-445	Y
		Honcho Plus	Monsanto	524-454	Y

ACTIVE INGREDIENT	STATES WITH APPROVAL BASED UPON CURRENT EIS/ROD & COURT INJUNCTIONS	TRADE NAME	MANUFACTURER	EPA REG. NUMBER	CA REG. **
Glyphosate - cont.	AK, AZ, CA, CO, ID, MT, ND,	Roundup PRO	Monsanto	524-475	Y
	NE, NM, NV, OK, OR, SD, TX,	Roundup PRO Concentrate	Monsanto	524-529	Y
	UT, WA, WY	Roundup PRO Dry	Monsanto	524-505	Y
		Roundup PROMAX	Monsanto	524-579	Y
		GlyphoMate 41	PBI Gordon Corp.	2217-847	Y
		Aqua Neat	Nufarm Americas Inc	228-365	Y
		Foresters	Nufarm Americas Inc	228-381	Y
		Razor	Nufarm Americas Inc	228-366	Y
		Razor Pro	Nufarm Americas Inc.	228-366	Y
		AquaPro Aquatic Herbicide	SePRO Corporation	62719-324-67690	Y
		Rattler	Setre (Helena)	524-445-5905	Y
		Buccaneer	Tenkoz	55467-10	Y
		Buccaneer Plus	Tenkoz	55467-9	Y
		Mirage Herbicide	UAP-Platte Chem. Co.	524-445-34704	Y
		Mirage Plus Herbicide	UAP-Platte Chem. Co.	524-454-34704	Y
		Glyphosate 4	Vegetation Man., LLC	73220-6-74477	Y
Glyphosate +	AK, AZ, CA, CO, ID, MT, ND,	Landmaster BW	Albaugh, Inc./Agri Star	42570-62	N
2,4-D	NE, NM, NV, OK, OR, SD, TX,	Campaign	Monsanto	524-351	N
	UT, WA, WY	Landmaster BW	Monsanto	524-351	N
Glyphosate +	AK, AZ, CA, CO, ID, MT, ND,	Fallowmaster	Monsanto	524-507	N
Dicamba	NE, NM, NV, OK, OR, SD, TX,				
	UT, WA, WY				
Hexazinone	AK, AZ, CA, CO, ID, MT, ND,	Velpar ULW	DuPont	352-450	N
	NE, NM, NV, OK, SD, TX, UT,	Velpar L	DuPont	352-392	Y
	WA, WY	Velpar DF	DuPont	352-581	Y
		Pronone MG	Pro-Serve	33560-21	N
		Pronone 10G	Pro-Serve	33560-21	Y
		Pronone 25G	Pro-Serve	33560-45	N

ACTIVE INGREDIENT	STATES WITH APPROVAL BASED UPON CURRENT EIS/ROD & COURT INJUNCTIONS	TRADE NAME	MANUFACTURER	EPA REG. NUMBER	CA REG. **
Hexazinone +	AK, AZ, CO, ID, MT, ND, NE,	Westar	DuPont Crop Protection	352-626	Y
Sulfometuron methyl	NM, NV, OK, SD, TX, UT, WA, WY	Oustar	DuPont Crop Protection	352-603	Y
NOTE: In accordance with the Record of Decision for the *Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (PEIS), the aerial application of these herbicides is prohibited.					
Imazapic	AZ, CO, ID, MT,ND, NE, NM,	Panoramic 2SL	Alligare, LLC	66222-141-81927	N
	NV, OK. SD, TX, UT, WA, WY	Plateau	BASF	241-365	N
		Imazapic E 2 SL	Etigra, LLC	79676-65	N
Imazapic +	AZ, CO, ID, MT,ND, NE, NM,	Journey	BASF	241-417	N
Glyphosate	NV, OK, SD, TX, UT, WA, WY				
Imazapyr	AK, AZ, CA, CO, ID, MT, ND,	Imazapyr 2SL	Alligare, LLC	81927-23	N
	NE, NM, NV, OK, SD, TX, UT,	Imazapyr 4SL	Alligare, LLC	81927-24	N
	WA, WY	Ecomazapyr 2SL	Alligare, LLC	81927-22	N
		Arsenal Railroad Herbicide	BASF	241-273	N
		Chopper	BASF	241-296	Y
		Arsenal Applicators Conc.	BASF	241-299	N
		Arsenal	BASF	241-346	N
		Arsenal PowerLine	BASF	241-431	N
		Stalker	BASF	241-398	N
		Habitat	BASF	241-426	Y
		Imazapyr E-Pro 2 - VM & Aquatic Herbicide	Etigra, LLC	81959-8	Y
		Imazapyr E-Pro 4 - Forestry	Etigra, LLC	81959-9	N
		Imazapyr E-Pro 2E - Site Prep & Basal	Etigra, LLC	81959-7	N
		Polaris RR	Nufarm Americas Inc.	241-273-228	N
		Polaris SP	Nufarm Americas Inc.	241-296-228	Y
		Polaris AC	Nufarm Americas Inc.	241-299-228	Y
		Polaris AQ	Nufarm Americas Inc.	241-426-228	Y
		Polaris Herbicide	Nufarm Americas Inc.	241-346-228	N
		SSI Maxim Arsenal 0.5G	SSI Maxim Co., Inc.	34913-23	N

ACTIVE INGREDIENT	STATES WITH APPROVAL BASED UPON CURRENT EIS/ROD & COURT INJUNCTIONS	TRADE NAME	MANUFACTURER	EPA REG. NUMBER	CA REG. **
Imazapyr - cont.	AK, AZ, CA, CO, ID, MT, ND,	Ecomazapyr 2 SL	Vegetation Man., LLC	74477-6	N
	NE, NM, NV, OK, SD, TX, UT,	Imazapyr 2 SL	Vegetation Man., LLC	74477-4	N
	WA, WY	Imazapyr 4 SL	Vegetation Man., LLC	74477-5	N
Imazapyr +	AK, AZ, CA, CO, ID, MT, ND, NE,	Mojave 70 EG	Alligare, LLC	74477-9-81927	N
Diuron	NM, NV, OK, SD, TX, UT, WA, WY	Sahara DG	BASF	241-372	N
		Imazuron E-Pro	Etigra, LLC	79676-54	N
		SSI Maxim Topsite 2.5G	SSI Maxim Co., Inc.	34913-22	N
Imazapyr +	AK, AZ, CA, CO, ID, MT, ND,	Lineage Clearstand	DuPont	352-766	N
Metsulfuron methyl	NE, NM, NV, OK, SD, TX, UT,				
	WA, WY				
Imazapyr +	AK, AZ, CA, CO, ID, MT, ND,	Lineage HWC	DuPont	352-765	N
Sulfometuron methyl +	NE, NM, NV, OK, SD, TX, UT,	Lineage Prep	DuPont	352-767	N
Metsulfuron methyl	WA, WY				
NOTE: In accordance with the Record of Decision for the *Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (PEIS), the aerial application of these herbicides is prohibited.					
Metsulfuron methyl	AK, AZ, CO, ID, MT, ND, NE,	MSM 60	Alligare, LLC	81927-7	N
	NM, NV, OK, SD, TX, UT, WA,	Escort DF	DuPont	352-439	N
	WY	Escort XP	DuPont	352-439	N
		MSM E-AG 60 EG Herbicide	Etigra, LLC	81959-14	N
		MSM E-Pro 60 EG Herbicide	Etigra, LLC	81959-14	N
		Patriot	Nufarm Americas Inc.	228-391	N
		PureStand	Nufarm Americas Inc.	71368-38	N
		Metsulfuron Methyl DF	Vegetation Man., L.L.C.	74477-2	N

ACTIVE INGREDIENT	STATES WITH APPROVAL BASED UPON CURRENT EIS/ROD & COURT INJUNCTIONS	TRADE NAME	MANUFACTURER	EPA REG. NUMBER	CA REG. **
Metsulfuron methyl + Chlorsulfuron	AK, AZ, CO, ID, MT, ND, NE, NM, NV, OK, SD, TX, UT, WA, WY	Cimarron Extra	DuPont	352-669	N
		Cimarron Plus	DuPont	352-670	N
Metsulfuron methyl + Dicamba + 2,4-D	AK, AZ, CO, ID, MT, ND, NE, NM NV, OK, SD, TX, UT, WA, WY	Cimarron MAX	DuPont	352-615	N
Picloram	AZ, CO, ID, MT, ND, NE, NM, NV, OK, OR, SD, TX, UT, WA, WY	Triumph K	Albaugh, Inc.	42750-81	N
		Triumph 22K	Albaugh, Inc.	42750-79	N
		Picloram K	Alligare, LLC	42750-81-81927	N
		Picloram K	Alligare, LLC	81927-17	N
		Picloram 22K	Alligare, LLC	42750-79-81927	N
		Picloram 22K	Alligare, LLC	81927-18	N
		Grazon PC	Dow AgroSciences	62719-181	N
		OutPost 22K	Dow AgroSciences	62719-6	N
		Tordon K	Dow AgroSciences	62719-17	N
		Tordon 22K	Dow AgroSciences	62719-6	N
Picloram + 2,4-D	AZ, CO, ID, MT, ND, NE, NM, NV, OK, OR, SD, TX, UT, WA, WY	GunSlinger	Albaugh, Inc.	42750-80	N
		Picloram + D	Alligare, LLC	42750-80-81927	N
		Picloram + D	Alligare, LLC	81927-16	N
		Tordon 101M	Dow AgroSciences	62719-5	N
		Tordon 101 R Forestry	Dow AgroSciences	62719-31	N
		Tordon RTU	Dow AgroSciences	62719-31	N
		Grazon P+D	Dow AgroSciences	62719-182	N
		HiredHand P+D	Dow AgroSciences	62719-182	N
		Pathway	Dow AgroSciences	62719-31	N

ACTIVE INGREDIENT	STATES WITH APPROVAL BASED UPON CURRENT EIS/ROD & COURT INJUNCTIONS	TRADE NAME	MANUFACTURER	EPA REG. NUMBER	CA REG. **
Sulfometuron methyl	AK, AZ, CA, CO, ID, MT, ND,	SFM 75	Alligare, LLC	81927-26	Y
	NE, NM, NV, OK, SD, TX, UT	Oust DF	DuPont	352-401	N
	WA, WY	Oust XP	DuPont	352-601	Y
		SFM E-Pro 75EG	Etigra, LLC	79676-16	Y
		Spyder	Nufarm Americas Inc.	228-408	Y
		SFM 75	Vegetation Man., L.L.C.	72167-11-74477	Y
NOTE: In accordance with the Record of Decision for the *Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (PEIS), the aerial application of these herbicides is prohibited.					
Sulfometuron methyl + Chlorsulfuron	AK, AZ, CA, CO, ID, MT, ND,	Landmark XP	DuPont	352-645	Y
	NE, NM, NV, OK, SD, TX, UT				
	WA, WY				
NOTE: In accordance with the Record of Decision for the *Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (PEIS), the aerial application of this herbicide is prohibited.					
Sulfometuron methyl + Metsulfuron methyl	AK, AZ, CA, CO, ID, MT, ND,	Oust Extra	DuPont	352-622	N
	NE, NM, NV, OK, SD, TX, UT				
	WA, WY				
NOTE: In accordance with the Record of Decision for the *Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (PEIS), the aerial application of this herbicide is prohibited.					
Tebuthiuron	AZ, CA, CO, ID, MT, ND, NE,	Spike 20P	Dow AgroSciences	62719-121	Y
	NM, NV, OK, SD, TX, UT, WA,	Spike 80DF	Dow AgroSciences	62719-107	Y
	WY	SpraKil S-5 Granules	SSI Maxim Co., Inc.	34913-10	Y
Tebuthiuron + Diuron	AZ, CA, CO, ID, MT, ND, NE,	SpraKil SK-13 Granular	SSI Maxim Co., Inc.	34913-15	Y
	NM, NV, OK, SD, TX, UT, WA,	SpraKil SK-26 Granular	SSI Maxim Co., Inc.	34913-16	Y
	WY				

ACTIVE INGREDIENT	STATES WITH APPROVAL BASED UPON CURRENT EIS/ROD & COURT INJUNCTIONS	TRADE NAME	MANUFACTURER	EPA REG. NUMBER	CA REG. **
Triclopyr	AK, AZ, CA, CO, ID, MT, ND,	Triclopyr 4EC	Alligare, LLC	72167-53-74477	Y
	NE, NM, NV, OK, SD, TX, UT	Triclopyr 3	Alligare, LLC	81927-13	Y
	WA, WY	Triclopry 4	Alligare, LLC	81927-11	Y
		Element 3A	Dow AgroSciences	62719-37	Y
		Element 4	Dow AgroSciences	62719-40	Y
		Forestry Garlon XRT	Dow AgroSciences	62719-553	Y
		Garlon 3A	Dow AgroSciences	62719-37	Y
		Garlon 4	Dow AgroSciences	62719-40	Y
		Garlon 4 Ultra	Dow AgroSciences	62719-527	Y
		Remedy	Dow AgroSciences	62719-70	Y
		Remedy Ultra	Dow AgroSciences	62719-552	Y
		Pathfinder II	Dow AgroSciences	62719-176	Y
		Tahoe 3A	Nufarm Americas Inc	228-384	Y
		Tahoe 3A	Nufarm Americas Inc.	228-518	Y
		Renovate 3	SePRO Corporation	62719-37-67690	Y
		Renovate OTF	SePRO Corporation	67690-42	Y
		Ecotriclopyr 3 SL	Vegetation Man., LLC	72167-49-74477	N
		Triclopyr 3 SL	Vegetation Man., LLC	72167-53-74477	N
Triclopyr +	AK, AZ, CA, CO, ID, MT, ND,	Everett	Alligare, LLC	81927-29	Y
2,4-D	NE, NM, NV, OK, SD, TX, UT,	Crossbow	Dow AgroSciences	62719-260	Y
	WA, WY				
Triclopyr +	AK, AZ, CA, CO, ID, MT, ND,	Prescott Herbicide	Alligare, LLC	81927-30	Y
Clopyralid	NE, NM, NV, OK, SD, TX, UT,	Redeem R&P	Dow AgroSciences	62719-337	Y
	WA, WY				

*** Refer to the complete label prior to considering the use of any herbicide formulation. Label changes can impact the intended use through, such things as, creation or elimination of Special Local Need (SLN) or 24 (c) registrations, changes in application sites, rates and timing of application, county restrictions, etc.**

**** Just because a herbicide has a Federal registration, and is approved under the current EIS, it may or may not be registered for use in California. This column identifies those formulations for which there is a California registration.**

APPENDIX C

EXAMPLE CALIFORNIA BLM PESTICIDE USE PROPOSAL

APPENDIX C
Example California BLM Herbicide Use Proposal

PROPOSAL NUMBER:
REFERENCE NUMBER:

FIELD OFFICE ________ **COUNTY** ________

LOCATION:
____

DURATION OF PROPOSAL:

____

I. HERBACIDE APPLICATION (including mixtures and surfactants):

	Trade Names	Common Names	EPA Registration No.	Manufacturer	Formulations (Liquid or Granular)	Method of Application
1						
2						
3						

MAXIMUM RATE OF APPLICATION:	
USE UNIT ON LABEL:	**POUNDS ACID EQUIVALENT/ACRE:**
1.	1.
2.	2.

INTENDED RATE OF APPLICATION:

APPLICATION DATES:

NUMBER OF APPLICATIONS:

II. PEST (List specific pest(s) and reason(s) for application):

III. MAJOR DESIRED PLANT SPECIES PRESENT:

IV. TREATMENT SITE: (Describe land type or use, size, stage of growth of target species, slope and soil type).

APPENDIX C (Cont.) Example California BLM Herbicide Use Proposal

ESTIMATED ACRES

V. SENSITIVE ASPECTS AND PRECAUTIONS: (Describe sensitive areas [e.g., marsh, endangered, threatened, candidate and sensitive species habitat] and distance to treatment site. List measures taken to avoid impact to sensitive areas).

VI. NON-TARGET VEGETATION: (Describe the impacts, cumulative impacts, and mitigations to non-target vegetation that will be lost as a result of this chemical application).

VII. INTEGRATED PEST MANAGEMENT: (Describe how this chemical application fits into your overall integrated pest management program for the treatment area.)

Originator: ____________________ **Date:**________

Company Name: ____________________

Phone: ____________________

Certified Herbicide Applicator: ____________________ **Date:**________

(Signature)

Field Office Pesticide/Noxious Weed Coordinator:

____________________ **Date:**________

(Signature)

APPROVALS:

____ **Date:**________

BLM Assistant Field Manager
Renewable Resources
(Signature)

APPROVALS (State Office Use Only):

____ **Date:**________

BLM State Pesticide Coordinator
(Signature)

____ **Date:**________

Deputy State Director, Natural Resources, Lands and Planning
(Signature)

___ CONCUR OR APPROVED
___ NOT CONCUR OR DISAPPROVED
___ CONCUR OR APPROVED WITH MODIFICATIONS

APPENDIX D

EXAMPLE CALIFORNIA BLM PESTICIDE APPLICATION RECORDS FORM

APPENDIX D
Example California BLM Herbicide Application Records Form

1. **General Information**
   a. Project Name:______________________________
   b. Operator:__________________________________
   c. Herbicide Use Proposal Number:__________________
   d. Reference Number:___________________________

2. **Name of Applicator or Employee(s) Applying the Herbicide:**
   ____
   ____

3. **Date(s) of Application:**_______________________________
   a. (MONTH, DAY, YEAR)

4. **Time Frame of Application:**__________________________

5. **Location of Application:** T_____ ,R_______ ,and Sec._______
   County_________________________

6. **Type of Equipment Used**:______________________________
   ____

7. **Herbicide(s) Used:**___________________________________
   Company or Manufacturer's Name:______________________
   Trade Name:____
   ____

   Type of Formulation: Liquid \____/ Granular \____/

8. **Rate of Application Used:**
   a. Active Ingredient per Acre______________________________
   b. Volume of Formulation per Acre_________________________

9. **Treatment Area**
   a. Actual Area Treated:_________________________________
   b. Total Project Area:___________________________________

10. **Primary Pest(s) Involved**:_____________________________
    ____

11. **Stage of Pest Development:**___________________________
    ____

12. **Site Treated:** \____/ Native Vegetation \____/ Seeded Vegetation \____/
    Other

13. **Weather Conditions:**
    a. Wind velocity:_________ b. Wind direction_________
    c. Temperature__________

14. **Monitoring Record** (IF INSUFFICIENT SPACE-CONTINUE ON BACK):

This record is required and must be completed, except for monitoring within 24 hours after completion of application of herbicides. This record must be maintained for minimum of 10 years.

Appendix I
Stormwater Pollution Prevention Plan (SWPPP)

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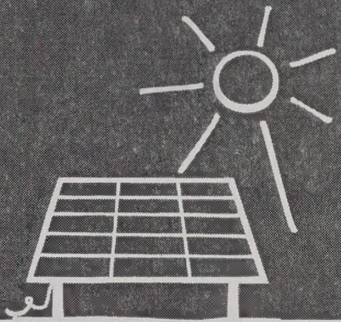
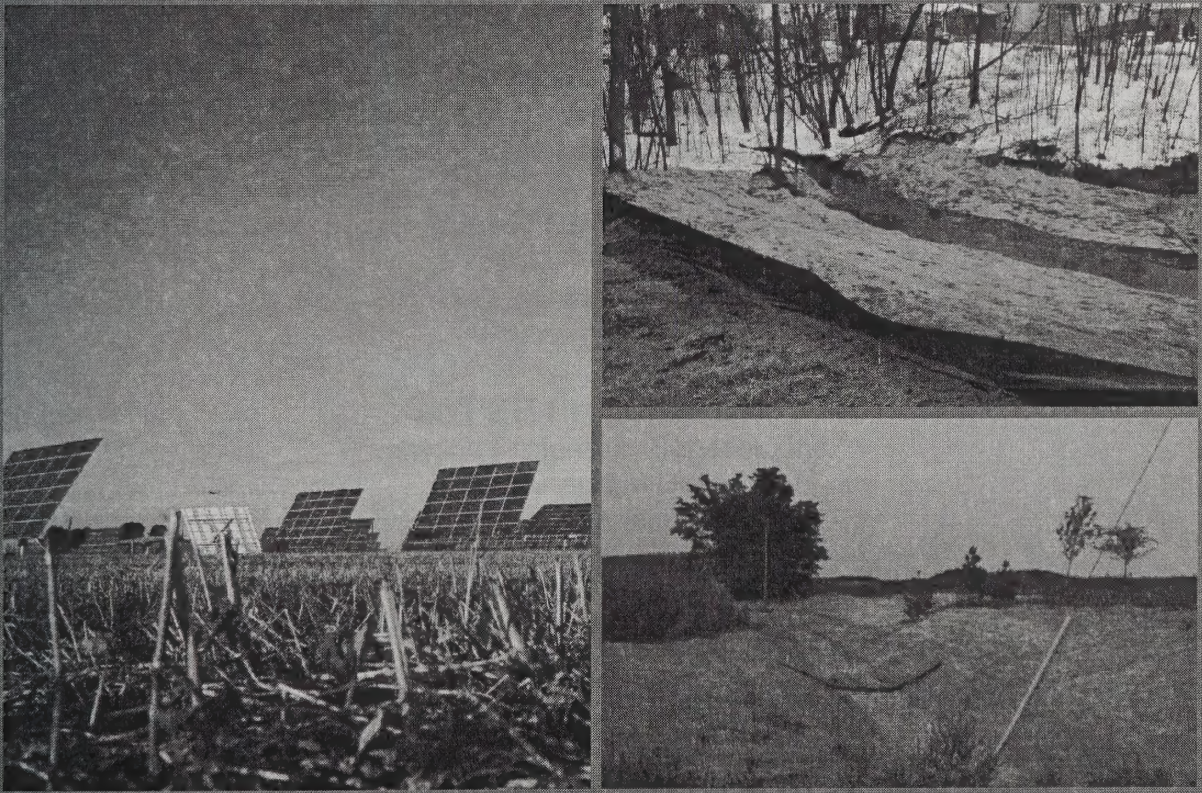


STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

Lucerne Valley Solar Project

San Bernardino County, California
January 8, 2010



Prepared For:
Chevron Energy Solutions Company
A Division of Chevron U.S.A. Inc.
345 California Street, 18th Floor
San Francisco, CA 94104

Prepared By:
Westwood

Storm Water Pollution Prevention Plan

For:
Lucerne Solar

Prepared for: Owner / Developer
Chevron Energy Solutions Company, A Division of Chevron USA, Inc
345 California Street, 18th Floor
San Francisco, California 94104
Ralph Hollenbacher
415-733-4910

Owner / Developer / Contractor:
Developer/General Contractor
Street Address
City, State, Zip
Contact person
Phone Number

Project Site Location/Address:
Southeast of Intersection of Santa Fe Fire Road and Foot Hill Road
Lucerne Valley, California, 92356

Contractors Storm Water Pollution Prevention Manager:
SWPPM Name
Company Name
Phone Number

SWPPP Prepared by:
Westwood Profession Services, Inc.
7699 Anagram Drive
Eden Prairie, Minnesota 55431
Aaron Mlynek, CPESC
952-697-5710

SWPPP Preparation Date: January 2010

Estimated Project Dates:
Start of Construction: Date **Completion of Construction:** Date

WDID No.: ______________________________

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Section 100

SWPPP Certifications and Approval

100.1 SWPPP Certification by Preparer

Project Name: Lucerne Solar

WDID Number:

"I certify under a penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Preparer's Signature	**Date**
Aaron Mlynek, CPESC Erosion Control Coordinator	**612-697-5710**
Name and Title	**Telephone Number**
Reviewer's Signature	**Date**
Chris Carda, PE Project Manager	
Name and Title	

DRAFT

100.2 Owner / Developer Approval and Certification of SWPPP

Owner / Developer
Approval and Certification of the
Storm Water Pollution Prevention Plan

Project Name: **Lucerne Solar**

WDID Number: ______________________

"I certify under a penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

DRAFT

______________________ ______________________

Owner / Developer Signature **Date**

______________________ ______________________

Owner / Developer Name and Title **Telephone Number**

100.3 Annual Compliance Certification

By July 1 of each year, the Contractor or Owner shall complete and submit an Annual Certification of Compliance to the appropriate Regional Water Quallity Control Board (RWQCB) stating compliance with the terms and conditions of the Permit and the SWPPP. The blank Annual Certification of Compliance Form is included in Attachment M. Completed Annual Certifications of Compliance and Approvals can be found in the following pages **(to be inserted by Owner / Contractor as completed).**

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Section 200

SWPPP Amendments

200.1 SWPPP Amendment Certification and Approval

This SWPPP shall be amended:

- Whenever there is a change in construction or operations which may affect the discharge of pollutants to surface waters, groundwater(s), or a municipal separate storm sewer system (MS4); or

- If any condition of the Permits is violated or the general objective of reducing or eliminating pollutants in storm water discharges has not been achieved. If the Regional Water Quality Control Board (RWQCB) determines that a Permit violation has occurred, the SWPPP shall be amended and implemented within 14-calendar days after notification by the RWQCB;

- Annually, prior to the defined rainy season; and
- When deemed necessary by the Owner / Developer / Contractor.

The following items will be included in each amendment:

- Who requested the amendment.

- The location of proposed change.

- The reason for change.

- The original Best Management Practices (BMP) proposed, if any.

- The new BMP proposed.

The amendments for this SWPPP, along with the Owner / Developer / Contractor's Certification and the Owner / Developer / Contractor's approval, can be found in the following pages. Amendments are listed in the Amendment Log in section 200.2.

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SWPPP Amendment No.

Project Name: Lucerne Solar

WDID Number: ______________________

Contractor Certification of the Storm Water Pollution Prevention Plan Amendment

"I certify under a penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

______________________	______________________
Contractor's Signature	**Date**
______________________	______________________
Contractor's Name and Title	**Telephone Number**

Owner / Developer Approval of the Storm Water Pollution Prevention Plan Amendment

"I certify under a penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

______________________	______________________
Owner's Signature	**Date**
______________________	______________________
Name and Title	**Telephone Number**

DRAFT

200.2 Amendment Log

Project Name: Lucerne Solar

WDID Number: ______________________

Amendment No.	Date	Brief Description of Amendment	Prepared by

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Section 300

Introduction and Project Description

300.1 Introduction and Project Description

The Lucerne Valley Solar Project is located in the southwestern part of San Bernardino County in the Lucerne Valley. The site is located at the foot of the San Bernardino National Forest on the western edge of the Mojave Desert. The 516-acre project is contained completely within public lands administered by the United States Department of Interior's Bureau of Land Management (BLM). Specifically, the site is located south of County Road 247 at the intersection of Santa Fe Fire Road, approximately nine miles east of the community of Lucerne Valley.

The project proposes to construct approximately 45 megawatts of electricity through the use of solar photovoltaic panels mounted on piers. This system converts solar radiation into direct current electricity. In addition to the arrays of panels, a 240 square-foot operations and maintenance building will be constructed to provide office space for maintenance staff and to house maintenance equipment. A grid of gravel access roads will be constructed as shown on the Preliminary Construction Plans to provide access to the panels.

The intent is to minimize impacts to the existing ground and vegetation during construction to reduce erosive impacts associated with the development. The existing vegetation will be trimmed to a height of four inches or less to allow temporary traffic for construction. The majority of the electrical collection system will be installed by directional boring. The existing deep washes (approximately two feet in depth and greater) will remain in place to allow the larger flows to bypass the proposed improvements. Conversely, the array piers will be constructed through existing shallow drainage paths that are less than two feet in depth to allow the existing flows to continue to fan out and flow through the site as it does under existing conditions. This study will demonstrate that the flow patterns will be maintained while the project is under operation. This minimalistic approach will ease the transition when the site returns to BLM control after the life of the project.

300.2 Unique Site Features

According to the USGS, the channels through the site (which can also be seen in the aerial photography) are classified as active wash deposits consisting of unconsolidated medium to coarse grained sand and sandy gravel with subordinate fine sand and silt. The channels are not vegetated and are characterized by active and recently active sediment accumulation with little or no soil-profile development.

The most-densely vegetated potions of the site are located east of Santa Fe Fire Road and the area and within a quarter of a mile to the west of Santa Fe Fire Road. These areas are designated as

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young alluvial fan deposits by the USGS and contain approximately thirty percent vegetation cover consisting of desert creosote bush.

The soil surface in the existing conveyances exhibits prominent bar and swale morphology and the soils consist of unconsolidated to slightly consolidated sand and gravel, poorly to moderately sorted. The braided pattern indicates that flow patterns are unstable and this area is active. The flow channels in this area are typically less than one to two feet in depth and ever-changing.

Endangered species: Dessert Tortoise Biological Assessment BLM document
SHPO / Cultural Resources: No significant cultural resources present on site which need to be protected. (to get from Larry Freeberg)

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300.3 Construction Site Estimates

The following are estimates of the construction site:

Total site area:	509.65 acres
Disturbed site area:	136.28 acres
Percentage impervious area before construction:	0.1%
Runoff coefficient before construction (1):	Number
Percentage impervious area after construction:	10.9%
Runoff coefficient after construction (1):	Number
Anticipated storm water flow on to the construction site (2):	Number

(1) Calculations are shown in Attachment D
(2) Calculations are shown in Attachment E

300.4 Projection Schedule/Water Pollution Control Schedule*

Estimated Construction Start:	Date
Estimated Construction Finish:	Date
Mobilization of Equipment and Materials (Laydown Area):	Date
Installation of Sediment Controls:	Date
Store Temporary Erosion and Sediment Control Materials:	Date
Install Stabilized Entrance / Exit:	Date
Install Non-Storm Water Controls:	Date
Begin Road Grading Operation:	Date
Begin Utility Operations (Underground):	Date
Begin Utility Operations (Overhead):	Date
Begin Operation and Maintenance Building Activity:	Date
Start Installation of Rainy Season BMPs:	November 15, 2010
Complete installation of Rainy Season BMPs:	December 1, 2010

Rainy Season:	December 2010 – March 2011
Implement Final Erosion Control of Completed Areas	Date
File Notice of Termination with the SWQCB	Date

***A more detailed implementation schedule shall be attached at the end of this Section (300) by the contractor.**

300.5 Contact Information/List of Responsible Parties

The Storm Water Pollution Prevention Manager (SWPPM) assigned to this project is:

Name, Title and Certifications
Phone Number
Company Name
Company Address
City, State, ZIP

The SWPPM shall have primary responsibility and significant authority for the implementation, maintenance, inspection and amendments to the approved SWPPP. The SWPPM will be available at all times throughout the duration of the project. Duties of the Owner / Developer / Contractor's SWPPM include but are not limited to:

- Ensuring full compliance with the SWPPP and the Permit
- Implementing all elements of the SWPPP, including but not limited to:
  - Implementation of prompt and effective erosion and sediment control measures
  - Implementing all non-storm water management, and materials and waste management activities such as: monitoring discharges (dewatering, diversion devices); general site clean-up; vehicle and equipment cleaning, fueling and maintenance; spill control; ensuring that no materials other than storm water are discharged in quantities which will have an adverse effect on receiving waters or storm drain systems; etc.
- Pre-storm inspections
- Storm event inspections
- Post-storm inspections
- Routine inspections
- Updates/Amendments to the SWPPP, as needed
- Preparing annual compliance certification for owner's, or owner's authorized representative, signature
- Ensuring elimination of all unauthorized discharges
- The SWPPM shall be assigned authority by the Contractor to mobilized crews in order to make immediate repairs to the control measures
- Coordinate with the Contractor to assure all of the necessary corrections/repairs are made immediately, and that the project complies with the SWPPP, the Permit and approved plans at all times

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- Submitting Notices of Discharge and reports of Illicit Connections or Illegal Discharges

Section 400

References

The following documents are made a part of this SWPPP by reference:

- Project plans and specifications "Lucerne Solar Construction Plans", Project Number 20081195 Dated: XX/XX/2010 prepared by Westwood Professional Services, Inc.
- State Water Resources Control Board (SWRCB) Order No. 99-08-DWQ, National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS000002, Waste Discharge Requirements (WDRs) for Discharges of Storm Water Runoff Associated with Construction Activity.
- California Stormwater BMP Handbook – Construction, January 2003
- California Stormwater Quality Association SWPPP Template, July 2006
- Geotechnical Investigation Report, completed by XXXXXXX, Dated: XX/XX/XX.

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Section 500

Body of SWPPP

500.1 Objectives

This Storm Water Pollution Prevention Plan (SWPPP) has six main objectives:

- Identify all pollutant sources, including sources of sediment that may affect the quality of storm water discharges associated with construction activity (storm water discharges) from the construction site,
- Identify non-storm water discharges,
- Identify, construct, implement in accordance with a time schedule, and maintain Best Management Practices (BMPs) to reduce or eliminate pollutants in storm water discharges and authorized non-storm water discharges from the construction site during construction
- Develop a maintenance schedule for BMPs installed during construction designed to reduce or eliminate pollutants after construction is completed (post-construction BMPs),
- Identify a sampling and analysis strategy and sampling schedule for discharges from construction activity which discharge directly into water bodies listed on Attachment 3 of the Permit (Clean Water Act Section 303(d) [303(d)] Water Bodies listed for Sedimentation), and
- For all construction activity, identify a sampling and analysis strategy and sampling schedule for discharges that have been discovered through visual monitoring to be potentially contaminated by pollutants not visually detectable in the runoff.

This SWPPP conforms to the required elements of General Permit No. CAS000002 (Permit) issued by the State of California, State Water Resources Control Board (SWRCB). This SWPPP will be modified and amended to reflect any amendments to the Permit or any changes in construction or operations that may affect the discharge of pollutants from the construction site to surface waters, ground waters, or the municipal separate storm sewer system (MS4). The SWPPP will also be amended if it is in violation of any condition of the Permit or has not achieved the general objective of reducing pollutants in storm water discharges. The SWPPP shall be readily available on-site for the duration of the project.

500.2 Vicinity Map

The construction project vicinity map showing the project location, surface water boundaries, geographic features, construction site perimeter, and general topography, is located in Attachment A.

500.3 Pollutant Source Identification and BMP selection

Refer to Attachment Section B for standard details and specifications of BMPs from California Storm Water Association Construction Handbook (http://www.cabmphandbooks.com/Construction.asp).

500.3.1 Inventory of Materials and Activities that May Pollute Storm Water

The following is a list of construction materials that will be used and activities that will be performed that will have the potential to contribute pollutants, other than sediment, to storm water runoff (control practices for each activity are identified in the Water Pollution Control Drawings (WPCDs) provided in Attachment B and/or in Sections 500.3.4 through 500.3.9:

- Vehicle fluids, including oil, grease, petroleum, and coolants
- Solvents, thinners
- Concrete curing compounds
- Cement materials including underground structures and above ground structures
- General Litter
- Base and sub-base materials
- Paints
- Solvents and Thinners
- Mortar Mix
- BMP materials
- Treated Lumber
- PCC rubble
- Landscape materials(Herbicides)

Construction activities that have the potential to contribute sediment to storm water discharges include:

- Clear and grub operations
- Grading operations
- Soil import operations
- Utility (overhead and underground operations)
- Landscaping

Attachment C lists all Best Management Practices (BMPs) that have been selected for implementation in this project. Implementation and location of BMPs are shown on the WPCDs in Attachment B. Narrative descriptions of BMPs to be used during the project are listed by category in each of the following SWPPP sections.

500.3.2 Existing (pre-construction) Control Measures

There are no pre-construction control measures anticipated at the time of SWPPP completion.

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500.3.3 Nature of Fill Material and Existing Data Describing the Soil

Fill Material:

Material imported to the site will consist of a granular "B" type II base material used to construct the access roads. This material will be compacted and poses a slight erosion risk.

Existing Soils:

Soils in the area present a moderate erosion risk as the K Factor (Soil Erodibility Factor, rock fragments free: An erodibility factor which quantifies the rock fragments free susceptibility of soil particles to detachment and movement by water. This factor is used in the Revised Universal Soil Loss Equation to calculate soil loss by water) is an average of 0.27 with a range from 0.15 to 0.43.

Soil make up varies between Gravelly Loamy Sand, Sand, Gravelly Sand, Loamy Fine Sand, Gravelly Sandy Loam and Gravelly Loam. Fine Sands and Loamy sand will be the primary concern of wind and water erosion within the project area.

The prevailing hydrologic soil group throughout the Mojave and this site is Group A. This classification is provided by the National Resource Conservation Service based on the soil's runoff potential. Group A generally consists of sandy soils with low runoff potential and high infiltration rates even when thoroughly wetted. The upstream watershed from the site includes type D soils with higher runoff potential and lower infiltration rates.

The geomorphic assessment is collaborated by the soil borings taken by Earth Systems Southwest in late 2009. According to the geotechnical assessment by Earth Systems Southwest, the site consists of a three to five foot layer of silty sand over a layer of hardened caliche. Refer to the geotechnical report in Appendix XX for additional information.

There are no known past uses of the site which would contribute pollutants to the storm water discharge at the time of completion of this report. (need phase 1 info).

500.3.4 Erosion Control

Erosion control, also referred to as soil stabilization, consists of source control measures that are designed to prevent soil particles from detaching and becoming transported in storm water runoff. Erosion control BMPs protects the soil surface by covering and/or binding soil particles. This project will incorporate erosion control measures required by the contract documents, and other measures elected by the Contractor, SWPPP Manager, or Owner. This project will implement the following practices for effective temporary and final erosion control during construction:

1) Preserve existing vegetation where required and when feasible.

2) Apply temporary erosion control to remaining active and non-active areas as required by the California Storm Water BMPs Handbook – Construction, and the contract documents. Reapply as necessary to maintain effectiveness.
3) Implement temporary erosion control measures at regular intervals throughout the defined rainy season to achieve and maintain the contract's disturbed soil area requirements. Implement erosion control prior to the defined rainy season.
4) Stabilize non-active areas as soon as feasible after the cessation of construction activities.
5) Control erosion in concentrated flow paths by applying erosion control blankets, erosion control seeding, and lining swales as required in the contract documents.
6) Apply seed to areas deemed substantially complete by the Owner during the defined rainy season.
7) At completion of construction, apply permanent erosion control to all remaining disturbed soil areas.

Sufficient erosion control materials will be maintained on-site to allow implementation in conformance with Permit requirement and described in this SWPPP. This includes implementation requirements for active areas and non-active areas that require deployment before the onset of rain.

Implementation and locations of temporary erosion control BMPs are shown on the Water Pollution Control Drawings (WPCDs) in Attachment B and/or described in this section. The BMP Consideration Checklist in Attachment C indicates the BMPs that will be implemented to control erosion on the Construction site; these are:

- EC-1 Scheduling
- EC-2 Preservation of Existing Vegetation
- EC-3 Hydraulic Mulch
- EC-4 Hydro seeding
- EC-5 Soil Binders
- EC-7 Geotextiles and Mats

EC-1, Scheduling

- Major grading operations are scheduled to occur during non-rainy periods.
- Erosion and sediment control practices are conducted year-round.
- Soil exposure shall be limited and staged as appropriate.
- Schedule road grading and hauling during dry periods.
- Implement temporary cover erosion practices prior to the rainy season.

EC-2, Preservation of Existing Vegetation

- Existing vegetation shall be preserved to the maximum extent practicable. Approximately 80% of the project area will be left undisturbed.
- Minimize contractor access through communications to preserve existing vegetation outside of the road grading and lay-down areas.

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EC-3, Hydraulic Mulch

- Use of non-paper based hydraulic mulch should be used for temporary cover of exposed soils prior to significant forecasted rain events.
- Apply hydraulic mulches to stockpiles or other exposed soils adjacent to access roads for temporary cover.
- Allow 24 hours for drying prior to a forecasted rain event.

EC-4, Hydro seeding

- Contractor should consult the local NRCS office for seed mixtures
- Apply hydro seeding prior to rainy season on final graded areas
- Hydro seeding should be used in conjunction with EC-3 for temporary cover
- Additional applications may be necessary until adequate vegetation is established (70% density of existing vegetation is approximately 21%).

EC-5, Soil Binders

- Soil binders may be applied to any areas that will remain disturbed for more than two weeks.
- Soil binders shall be reapplied as needed.
- Apply soil binders for temporary wind erosion protection
- Apply soil binders on access roads for wind erosion protection and erosion control
- Use of soil binder material shall be selected by the contractor for particular applications and shall meet CASQA standards and specifications.

EC-7, Geotextiles and Mats

- Erosion control blankets may be used to stabilize areas that will remain disturbed for more than two weeks.
- Erosion control blankets may be used in areas of concentrated flow which has been disturbed due to construction activity.
- Erosion control blankets may be used for areas around the Arizona Crossing banks / slopes.
- Erosion control blankets will be repaired or replaced as needed.
- Stapling and material of blankets shall be selected by the contractor or SWPPM and applied according to CASQA standards and specifications.
- Use of 6-mil plastic sheeting may be used for temporary cover of stock piles or spoil piles of material.

The SWPPM will implement erosion control BMPs as needed to minimize or prevent soil movement from water forces from the disturbed limits of the project. BMPs will be applied following progress of grading operations. Locations of erosion control BMPs may change as the project progresses and disturbed areas are expanded. The SWPPM will implement erosion control measures as needed before, during and after storm events.

500.3.5 Sediment Control

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Sediment controls are structural measures that are intended to complement and enhance the selected erosion control measures and reduce sediment discharges from active construction areas. Sediment controls are designed to intercept and settle out soil particles that have been detached and transported by the force of water. This project will incorporate sediment control measures required by the contract documents, and other measures selected by the Contractor, SWPPP Manager, or Owner.

Sufficient quantities of temporary sediment control materials will be maintained on-site throughout the duration of the project, to allow implementation of temporary sediment controls in the event of predicted rain, and for rapid response to failures or emergencies, in conformance with other Permit requirements and as described in this SWPPP. This includes implementation requirement for active areas and non-active areas before the onset of rain.

Implementation and locations of temporary sediment control BMPs are shown on the WPCD's in Attachment B. The BMP Consideration Checklist in Attachment C indicates all the BMPs that will be implemented to control sediment on the construction site; these are:

- SE-1 Silt fence
- SE-4 Check dams
- SE-5 Fiber Rolls

SE-1, Silt fence

- Silt fence may be used as site perimeter where conditions warrant such as around the staging / lay down area
- Silt fence could be used in areas of sheet flow to protect adjacent conveyances
- Silt fence will be repaired and replaced as needed according to findings of inspections.

SE-4, Check dams

- Check dams will generally be constructed as a pyramid of rock material in secession (three checks spaced every 100 feet) at the down gradient perimeter in concentrated flow. Specific dimension will vary per location.
- Check dams shall be installed and maintained according to CASQA specifications.

SE-5, Fiber Rolls

- Fiber Rolls may be used around temporary stockpiles for perimeter control.
- Fiber rolls may be used as perimeter control for short duration exposed / active areas in place of silt fence.
- Fiber rolls shall be installed and maintained according to CASQA specifications.

500.3.6 Tracking Control

The following BMPs have been selected to reduce sediment tracking from the construction site onto private or public roads:

- TC-1 Stabilized construction entrance
- TC-2 Stabilized construction roadway

TC-1, Stabilized construction entrance

- A stabilized construction entrance will be installed where pavement ends to minimize tracking.
- Gravel/rock of ± 2 inches placed to a depth of 12 inches shall be used for stabilized entrance. Specific dimension will vary per location.
- Gravel/rock will be cleaned and maintained as needed.

TC-2, Stabilized construction roadway

- A stabilized construction roadway will be used for access and hauling
- Use of WE-1 or EC-5 will likely be needed to minimize wind erosion
- Minimize traffic speed to prevent excess dust generation along roads

The SWPPM shall construct stabilized construction entrances / exits for the project site as shown on the attached erosion control plan. Stabilized constructed roadways will be implemented by the SWPPM as necessary to minimize potential of dust and erosion of exposed soils during construction.

500.3.7 Wind Erosion Control

The following BMPs have been selected to control dust from the construction site:

- WE-1 Wind erosion control
- EC-5 Soil Binders

WE-1, Wind erosion control

- Potable water will be applied to disturbed soil areas of the project to control dust and maintain moisture levels for compaction.
- Water will be applied by water trucks as needed. Water application rates will be concentrated during the summer and fall months.
- Water conservation practices will be used in conjunction with dust control measures to prevent discharges associated with dust control applications.
- Plastic covers shall be used to prevent dispersal of sediment from stockpiles as necessary.

EC-5, Soil Binders

- Soil binders may be applied to any areas that will remain disturbed for more than two weeks.

- Soil binders shall be reapplied as needed.
- Apply soil binders for temporary wind erosion protection
- Apply soil binders on access roads for wind erosion protection and erosion control
- Use of soil binder material shall be selected by the contractor for particular applications and shall meet CASQA standards and specifications.

Application of water shall be used to minimize dust generation from wind erosion forces. During windy conditions (forecasted and / or actual conditions of 25 mph or greater) wind erosion control shall be applied at intervals sufficient enough to adequately control wind erosion. Additionally, vehicle traffic speed limits should be kept low to minimize dust generation; application of dust palliatives to haul roads or access roads shall be implemented at intervals sufficient enough to minimize dust generation from vehicle traffic.

500.3.8 Non-Storm Water Control

An inventory of construction activities and potential non-storm water discharges is provided in Section 500.3.1. The BMP Consideration Checklist in Attachment C and the following list indicates the BMPs that have been selected to control non-storm water pollution on the construction site. Implementation and locations of some non-storm water control BMPs are shown on the Water Pollution Control Drawings (WPCDs) in Attachment B. A narrative description of each BMP follows.

- NS-1 Water Conservation Practices
- NS-6 Illicit Connection / Illegal Discharge Detection and Reporting
- NS-9 Vehicle and equipment fueling
- NS-10 Vehicle and equipment maintenance
- NS-12 Concrete Curing
- NS-13 Concrete Finishing

NS-1, Water Conservation Practices

- Use of water for dust or other uses shall be conserved.
- Maintain all equipment and vehicles to prevent leaks
- Observe application for any runoff and implement appropriate erosion and sediment controls to prevent sediment discharge off site.

NS-6, Illicit Connection / Illegal Discharge Detection and Reporting

- Contractor shall review SWPPP prior to construction
- SWPPM shall inspect site for presence of illegal discharges or existing contamination / dumping prior to construction starting.
- Observe perimeters of project for any potential illegal discharges or dumping which may enter the site area.

NS-9, Vehicle and equipment fueling

- Vehicle and equipment fueling will occur off-site.
- If impractical to send equipment off-site, fueling will only take place in designated areas via fueling truck.
- Leaks and spills will be cleaned up daily.
- Drip pans or absorbent pads shall be used during fueling.

NS-10, Vehicle and equipment maintenance

- Drip pans or absorbent pads shall be used during maintenance work that involves fluids.
- Dedicated maintenance areas will be located 50 feet from downstream drainage facilities and water courses.
- Used oils, fluids, lubricants, and spill cleanup material will be disposed of properly.
- Oil and chemicals will be stored in secondary containment.

NS-12, Concrete Curing

- Use proper storage and handling of material on site.
- Avoid over spraying of material
- Avoid drift of material by applying close to concrete surface

NS-13, Concrete Finishing

- Use proper storage and handling of material on site.
- Avoid over spraying of material
- Avoid drift of material by applying close to concrete surface
- Refer to WM-6 and WM-8

500.3.9 Waste Management and Materials Pollution Control

An inventory of construction activities, materials, and wastes is provided in Section 500.3.1. The BMP Consideration Checklist in Attachment C and the following list indicates the BMPs that have been selected to handle materials and control construction site wastes. A narrative description of each BMP follows.

- WM-1 Material delivery and storage
- WM-2 Material use
- WM-3 Stockpile management
- WM-4 Spill prevention and control
- WM-5 Solid waste management
- WM-6 Hazardous Waste Management
- WM-8 Concrete waste management
- WM-9 Sanitary/Septic waste management
- WM-10 Liquid Waste Management

WM-1, Material delivery and storage

- Materials will be stored in a water tight secondary containment protected from rain.

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- Materials will be stored with sufficient separation to allow for spill cleanup and emergency response access.
- Incompatible materials shall not be stored together.
- Materials shall be stored in their original containers with labels kept legible. Illegible labels shall be replaced.
- Bagged and boxed materials shall be stored on pallets and not be allowed to accumulate on the ground, and will be covered with plastic to be protected from rain and wind during the rainy season.
- Material inventory stored on-site will be minimized.

WM-2, Material use

- Less hazardous, alternative materials will be utilized as often as possible.
- Use of hazardous materials on-site will be minimized.
- Manufacturers' directions will be followed for the uses of materials.
- Employees shall be trained in proper material usage.

WM-3, Stockpile management

- Bagged material shall be placed on pallets and covered.
- Stockpiles shall be placed away from drainage courses, concentrated flows of storm water, and inlets.
- Stockpiles shall be covered prior to the onset of precipitation or wind.

WM-4, Spill prevention and control

- Spills shall not be buried or washed with water.
- Proper storage, clean-up and spill reporting instructions for hazardous materials stored or used on the project site shall be posted at all times in an open, conspicuous and accessible location.
- Used cleanup materials, contaminated materials, and recovered spill material that is no longer suitable for the intended purpose shall be stored and disposed of properly.

WM-5, Solid waste management

- The production of solid waste materials will be minimized when possible.
- Littering shall be prohibited by employees, subcontractors, and visitors.
- Litter and debris shall be disposed of properly.

WM-6, Hazardous Waste Management

- The production of hazardous waste materials will be minimized when possible.
- Train contractors in handling, storage and transport of hazardous waste.
- Storage of all material shall be in original, labeled containers.

WM-8, Concrete waste management

- Concrete trucks shall washout in designated washout pits.
- Concrete shall not be washed out on ground.

  - Broken concrete piles shall be disposed of properly within 48 hours of removal, or covered with plastic, on plastic prior to the onset of precipitation.

- WM-9, Sanitary/Septic waste management
  - Temporary sanitary facilities shall be stored away from drainage channels, inlets, and from traffic circulation.
  - Wastewater shall not be disposed of on-site, and shall be disposed of properly.
  - Sanitary/septic facilities shall be maintained in good working order.

- WM-10, Liquid Waste Management
  - Train and instruct contractors to control liquid wastes such as concrete washout, bentonite and other waste liquids.
  - Contain bentonite slurry from directional boring and cleanup and remove material from the site for proper disposal.
  - See WM-6 for disposal of wastes.

Construction materials and stockpiles of material shall be stored in areas away from storm water drainage or conveyance areas.

Stockpiles of soil and fill material shall be located within sediment barriers as described in Section 500.3.5.

Contractors and subcontractors are to prevent spills from occurring by following WM-4; should spills or leaks occur the incident should be reported immediately to the SWPPPM so the material can be contained, cleaned up and properly documented.

Solid wastes shall be disposed of properly by designating a waste collection area and BMP such as dumpsters. The dumpsters shall be used throughout the site and located away from drainage areas and have adequate cover and containment if material in the dumpster could be a stormwater pollutant.

The SWPPPM shall provide convenient, well maintained temporary sanitary facilities for use by all personnel during working hours. Maintenance of the facilities shall be arranged with a septic waste service provider. Temporary sanitary facilities shall be located away from drainage ways and stormwater conveyances.

Contaminated soils are not believed to be present within the site area; should contaminated soils be discovered the material must be isolated and protected from stormwater contact and hauled off site for disposal or treatment by a licensed hazardous waste hauler.

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500.4 Water Pollution Control Drawings (WPCDs)

The Water Pollution Control Drawings can be found in Attachment B of the SWPPP.

500.5 Construction BMP Maintenance, Inspection, and Repair

Inspections will be conducted as follows:

- Within 24 hours prior to a forecast storm
- Within 24 hours after a storm event that causes runoff from the construction site
- Every 24 hours during extended rain events

Completed inspection checklists will be kept with the SWPPP and available on site at all times.

A tracking or follow-up procedure shall follow any inspection that identifies deficiencies is BMPs. A program for Maintenance, Inspection and Repair of BMPs is shown in Attachment G.

During an inspection the qualified inspector must identify BMP effectiveness and implement repairs or design changes as soon as field conditions allow safe access. Equipment, materials and workers must be available for rapid response to failures and emergencies. Each inspection should also include:

- Inspection date
- Weather information with estimate of beginning of storm event, duration of event, time elapsed since last storm and approximate total rainfall amounts
- Description of inadequate BMPs
- If safe access during storm events is possible observations of all BMPs or following a storm event a visual inspection at the relevant outfall, discharge point or downstream location and required maintenance activities is needed.
- Corrective actions required including any changes to the SWPP and implementation dates for such actions
- Inspectors name, title and signature.

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500.6 Post-Construction Storm Water Management

500.6.1 Post-Construction Control Practices

Post construction control practices include stabilization of disturbed areas to 70% vegetated cover from preconstruction native background vegetated condition for areas which are not utilized as access roads or permanent parking / building uses. It is estimated the native preconstruction vegetated cover is 30%. 70% of 30% = (0.70 x 0.30) 0.21 or 21%. The site shall be considered stabilized once reestablishment of 21% density vegetated cover. No permanent stormwater control practices are planned as runoff should be infiltrated into the pervious soil areas.

500.6.2 Operation/Maintenance after Project Completion

Post construction BMPs above (permanent vegetated cover and access roads) will be funded and maintained by Chevron Energy Solutions Company.

500.7 Training

Section 300.5 shows the name of the Contractor's Storm Water Pollution Prevention Manager (SWPPM). Training documentation can be found in Attachment I **(SWPPM shall insert training documentation)**

This SWPPP was prepared by Westwood Professional Services, Inc under supervision of Aaron Mlynek, CPESC (#3344) and Chris Carda, PE a registered civil engineer in California (License # 75322).

500.8 List of Subcontractors

All contractors and subcontractors will be notified of the requirement for storm water management measures during the project. **A list of contractors / subcontractors will be maintained and included in the SWPPP by the SWPPM.** If subcontractors change during the project, the list will be updated accordingly. The subcontractor notification letter and log is included in the SWPPP as Attachment J.

500.9 Other Plans/Permits

Other plans and permits can be found in Attachment N (as applicable).

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Section 600

Monitoring Program and Reports

600.1 Site Inspections

The SWPPM will inspect the site prior to a forecast storm, after a rain event that causes runoff from the construction site, at 24-hour intervals during extended rain events in addition to conducting an inspection once every month. The results of all inspections and assessments will be documented and a copy of inspections shall be provided to the Owner / Developer / Contractor within 24 hours. Copies of the completed inspection checklists will be maintained with the SWPPP on site. Site inspections conducted for monitoring purposes will be performed using the inspection checklist included in Attachment H.

The name and contact number of the assigned inspection personnel are listed below:

Assigned inspector / SWPPM:_______________Contact phone: ____________________

600.2 Non-Compliance Reporting

If a contaminated discharge occurs or if the project receives a written notice of non-compliance, the Contractor will immediately notify the Owner / Developer and will file a written report to the owner / developer within 7 days of the discharge or notice. The Owner is responsible for filing a written report to the Regional Water Quality Control Board (RWQCB) within 30 days of identification of non-compliance. Corrective measures will be implemented immediately following the discharge, notice or order. A sample Notice of Non-Compliance (NONC form is provided in Attachment K. All discharges will be documented on a Discharge Reporting Log using the example form in Attachment R.

The report to the Owner and to the RWQCB will contain the following items:

- The date, time, location, nature of operation, and type of unauthorized discharge, including the cause or nature of the notice or order,
- The control measures (BMPs) deployed before the discharge event, or prior to receiving notice or order,
- The date of deployment and type of control measures (BMPs) deployed after the discharge event, or after receiving the notice or order, including additional measures installed or planned to reduce or prevent re-occurrence, and
- An implementation and maintenance schedule for any affected BMPs

600.3 Record Keeping and Reports

Records shall be retained for a minimum of three years for the following items:

- Site inspections
- Compliance certifications

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- Discharge reports
- Approved SWPPP document and amendments
- Sampling records, forms and logs

600.4 Sampling and Analysis Plan for Sediment

This project does not have the potential to discharge directly to a water body listed as impaired due to Sedimentation/Siltation and/or Turbidity pursuant to Clean Water Act, Section 303(d).

600.5 Sampling and Analysis Plan for Non-Visible Pollutants

This Sampling and Analysis Plan (SAP) for Non-Visible Pollutants describes the sampling and analysis strategy and schedule for monitoring non visible pollutants in storm water discharges from the project site and off-site activities directly related to the project, in accordance with the requirements of Section B of the General Permit, including SWRCB Resolution 2001-046.

600.5.1 Scope of Monitoring Activities

The following is a list of construction materials, wastes or activities, as identified in Section 500.3.1, that are potential sources of non-visible pollutants to storm water discharges from the project. Storage, use, and operational locations are shown on the WPCDs in Attachment B.

- Vehicle fluids, including oil, grease, petroleum, and coolants
- Solvents, thinners
- Concrete curing compounds
- Cement materials including underground structures and above ground structures
- General Litter
- Base and sub base materials
- Paints
- Solvents and Thinners
- Mortar Mix
- BMP materials
- Treated Lumber
- PCC rubble
- Landscape materials (Herbicides)

Sampling for non-visible pollutants will be conducted when (1) a breach, leakage, malfunction, or spill is observed; and (2) the leak or spill has not been cleaned up prior to the rain event; and (3) there is the potential for discharge of non-visible pollutants to surface waters or drainage system.

600.5.2 Monitoring Strategy

Sampling Schedule

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Samples for the applicable non-visible pollutant(s) and a sufficiently large uncontaminated background sample shall be collected during the first two hours of discharge from rain events that result in a sufficient discharge for sample collection. Samples shall be collected during daylight hours (sunrise to sunset) and shall be collected regardless of the time of year, status of the construction site, or day of the week.

In conformance with the U.S. Environmental Protection Agency definition, a minimum of 72 hours of dry weather will be used to distinguish between separate rain events.

Collection of discharge samples for non-visible pollutant monitoring will be triggered when any of the following conditions are observed during the required inspections conducted before or during rain events:

- Materials or wastes containing potential non-visible pollutants are not stored under watertight conditions. Watertight conditions are defined as (1) storage in a water tight container, (2) storage under a watertight roof or within a building, or (3) protected by temporary cover and containment that prevents storm water contact and runoff from the storage area.
- Materials or wastes containing potential non-visible pollutants are stored under watertight conditions, but (1) a breach, malfunction, leakage, or spill is observed, (2) the leak or spill is not cleaned up prior to the rain event, and (3) there is the potential for discharge of non-visible pollutants to surface waters or a storm sewer system.
- An operational activity, including but not limited to those in Section 600.5.1, with the potential to contribute non-visible pollutants (1) was occurring during or within 24 hours prior to the rain event, (2) applicable BMPs were observed to be breached, malfunctioning, or improperly implemented, and (3) there is the potential for discharge of non visible pollutants to surface waters or a storm sewer system.
- Soil amendments that have the potential to change the chemical properties, engineering properties, or erosion resistance of the soil have been applied, and there is the potential for discharge of non-visible pollutants to surface waters or a storm sewer system.
- Storm water runoff from an area contaminated by historical usage of the site has been observed to combine with storm water runoff from the site, and there is the potential for discharge of non-visible pollutants to surface waters or a storm sewer system.

Sampling Locations

Sampling locations are based on proximity to planned non-visible pollutant storage, occurrence or use; accessibility for sampling, personnel safety; and other factors in accordance with the applicable requirements in the Permit. Planned sampling locations are shown on the WPCDs in Attachment B at discharge points.

A sampling location has been identified for the collection of an uncontaminated sample of runoff as a background sample for comparison with samples being analyzed for non-visible pollutants. This location was selected such that the sample will not have come in contact

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with operational or storage areas associated with the materials, wastes, and activities identified in Section 500.3.1 or areas of disturbed soil / construction activity. This sampling location is denoted as "Sample Area A" or "SA-A". A sample location from lay-down area where potential storage or placement of materials may be present is labeled as "Sample Area – B" or "SA-B" which is located east of Santa Fe Fire Road.

If an operation activity or storm water inspection conducted 24 hours prior to or during a rain event identifies the presence of a material storage, waste storage, or operations area with spills or the potential for the discharge of non-visible pollutants to surface waters or a storm sewer system that was an unplanned location and has not been identified on the WPCDs, sampling locations will be selected using the same rationale as that used to identify planned locations.

600.5.3 Monitoring Preparation

Samples on the project will be collected by the following Contractor personnel:

Company Name: ____________________

Personnel Name: ____________________

Contact Telephone Number: ____________________

Alternate Personnel Name: ____________________

Alternate Telephone Number: ____________________

Samples on the project site will be collected by the following certified lab:

Lab Name: ____________________

Street address: ____________________

City, state, zip: ____________________

Phone number: ____________________

The SWPPM and / or Contractor conducting the sampling will contact LAB NAME prior to the possible sampling with adequate time to ensure sampling equipment and materials are available and to collect samples, if required.

600.5.4 Analytical Constituents

Identification of Non-Visible Pollutants

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The following is a list of possible non-visible pollutants. The table in Attachment Q provides the constituents associated with each non-visible pollutant.

- Vehicle fluids, including oil, grease, petroleum, and coolants
- Solvents, thinners
- Concrete curing compounds
- Cement materials including underground structures and above ground structures
- General Litter
- Base and sub base materials
- Paints
- Solvents and Thinners
- Mortar Mix
- BMP materials
- Treated Lumber
- PCC rubble
- Landscape materials (Herbicides)

600.5.5 Sample Collection and Handling

Sample Collection Procedures

Samples of discharge will be collected at the designated sampling locations shown on the WPCDs for observed breaches, malfunction, leakages, spills, operational areas, soil amendment application areas, and historical site usage areas that triggered the sampling event.

Grab samples will be collected and preserved in accordance with the methods identified below. Only personnel trained in proper water quality sampling will collect samples.

Sampling will be collected by placing a separate lab-provided sample container directly into a stream of water down gradient and within close proximity to the potential non-visible pollutant discharge location. This separate lab-provided sample container will be used to collect water, which will be transferred to sample bottles for laboratory analysis. The up gradient and uncontaminated background samples shall be collected first, prior to collecting the down gradient to minimize cross-contamination. The sampling personnel will collect the water up gradient of where they are standing. Once the separate lab-provided sample container is filled, the water sample will be poured directly into sample bottles provided by the laboratory for analysis.

To maintain sample integrity and prevent cross-contamination, sampling collection personnel will:

- Wear a clean pair of surgical gloves prior to the collection and handling of each sample at each location.

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- Not contaminate the inside of the sample bottle by not allowing it to come into contact with any material other than the water sample.
- Discard sample bottles or sample lids that have been dropped onto the ground prior to sample collection.
- Not leave the cooler lit open for extended periods of time once samples are placed inside.
- Not sample near a running vehicle where exhaust fumes may impact the sample.
- Not touch the exposed end of a sampling tube, if applicable.
- Avoid allowing rainwater to drip from rain gear or other surfaces into sample bottles.
- Not eat, smoke, or drink during sample collection.
- Not sneeze or cough in the direction of an open sample bottle.
- Minimize the exposure of the samples to direct sunlight, as sunlight may cause biochemical transformation of the sample to take place.
- Decontaminate sampling equipment prior to sample collection using a TSP-soapy water wash, distilled water rinse, and final rinse with distilled water.
- Dispose of decontamination water/soaps appropriately; i.e., not discharge to the storm drain system or receiving water.

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Sample Handling Procedures

Immediately following collection, sample bottles for laboratory analytical testing will be capped, labeled, documented on a Chain of Custody (COC) form provided by the analytical laboratory, sealed in a re-sealable plastic storage bag, placed in an ice-chilled cooler, at as near to 4 degrees Celsius as practicable, and delivered within 24 hours to the following California state-certified laboratory:

Lab Name: __________________________

Street address: __________________________

City, state, zip: __________________________

Phone number: __________________________

Immediately following collection, samples for field analysis will be tested in accordance with the field instrument manufacturer's instructions and results recorded on the Sampling Activity Log.

Sample Documentation Procedures

Data documented on the sample bottle identification labels, chain of custody forms, sampling activity logs and inspection checklists should be recorded with waterproof ink. Samples will be labeled with the date, time, location, and job name. Duplicate samples will be specified as duplicate sample. Sampling activity logs, which is located in Attachment P, will be filled out during the sampling activity and placed in the SWPPP after the sampling event. In the event of erroneous information recorded, the information shall be redlined and the correct information shall be noted on the same form; the original erroneous information should still be readable. Date and initial any changes or updates on sampling forms, logs and checklists. The contractor or SWPPM should insert copies of the Chain of Custody forms in Attachment P from the approved lab once known. Any maintenance and calibration records will be maintained with the SWPPP and sampling records.

Sample Bottle Identification Labels

Sampling personnel will attach an identification lable to each sample bottle. The following information will be recorded on the label.

- Project Name
- Project Number
- Sample Identification Number and location [Date of Sample – Location] (example: 03/16/2010 – SA-A).
- Quality assurance / quality control (QA / QC) samples shall be identified similarly using a unique sample number or designation as above.
- Collection date and time
- Analysis constituent

Sampling Activity Logs

Activity logs for sampling events should identify the following items.

- Sampling Date
- Separate times for collected samples and QA / QC samples
- Unique sample identification number and location
- Analysis constituent
- Names of sampling personnel
- Weather conditions
- Precipitation Amount
- Field analysis results
- Other / Notes regarding special circumstances or details

Chain of Custody (COC)Forms

All samples to be analyzed by the listed laboratory in this SWPPP will be accompanied by a COC form provided by the laboratory. Only the sample collectors will sign the COC form over to the lab. COC procedures will be strictly followed for AQ / AC assurance.

Storm Water Quality Construction Inspection Checklists

When applicable, the SWPPM will document on the checklist when sampling was conducted for non-visible pollutants during or after a rain event.

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600.5.6 Sample Analysis

Samples shall be analyzed for applicable constituents based on the possible non-visible pollutants assessed in the pre-storm inspection. The Pollutant Testing Guidance Table is located in Attachment Q. For samples collected for field analysis, collection, analysis and equipment calibration will be in accordance with the field instrument manufacturer's specifications.

As applicable, the following field instrument(s) will be used for the respective constituents:

*Field Instrument	Constituent

* Instrument(s) will be maintained in accordance with manufacturer's instructions, calibrated before each sampling and analysis event.

600.5.7 Quality Assurance/Quality Control

One duplicate sample will be taken during each sampling event. The duplicate samples will be collected, handled, and analyzed the same as all other samples collected. The duplicate samples will be taken immediately after each primary sample has been collected and shall be collected where contamination is likely, not in the background sample. Duplicate samples shall only be used as a check on laboratory quality assurance.

600.5.8 Data Management and Reporting

A copy of all water quality analytical results and QA/QC data will be included in the onsite SWPPP within 5 days of sampling (for field analyses, if any) and within 30 days of sampling (for laboratory analyses).

Lab reports and COCs will be reviewed for consistency between lab methods, sample identifications, dates, and times for both primary samples and QA/QC samples. All data, including COC forms and Sampling Activity Logs, shall be kept with the SWPPP.

600.5.9 Data Evaluation

An evaluation of the water quality sample analytical results, including figures with sample locations, the water quality analytical results, and the QA/QC data for every event that samples are collected, will be included in the on-site SWPPP. Should the downstream sample concentrations exceed the upstream sample concentrations, the Storm Water Pollution Prevention manager or other personnel will evaluate the BMPs, site conditions, surrounding influences (including the run-on sample analysis), and other site factors to determine the probable cause for the increase.

As determined by the data and project evaluation, appropriate BMPs will be repaired or modified to mitigate increases in sediment concentrations in the water body. Any revisions to the BMPs will be recorded as an amendment to the SWPPP

600.5.10 Change of Conditions

Whenever SWPPP monitoring, pursuant to Section B of the General Permit, indicates a change in site conditions that might affect the appropriateness of sampling locations, testing protocols will be revised accordingly. All such revisions will be recorded as amendments to the SWPPP.

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Attachment A

Vicinity Map

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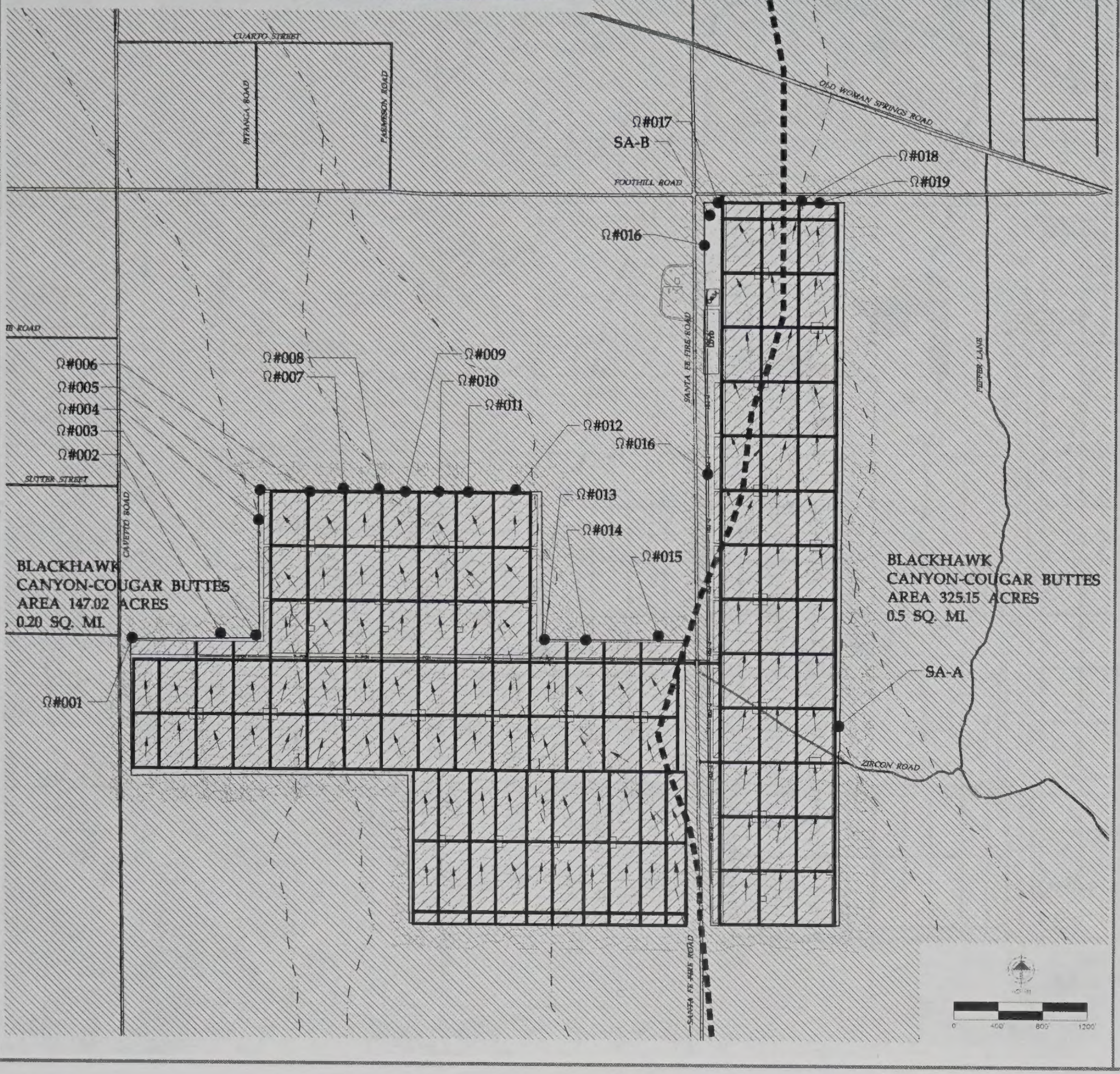
LEGEND:

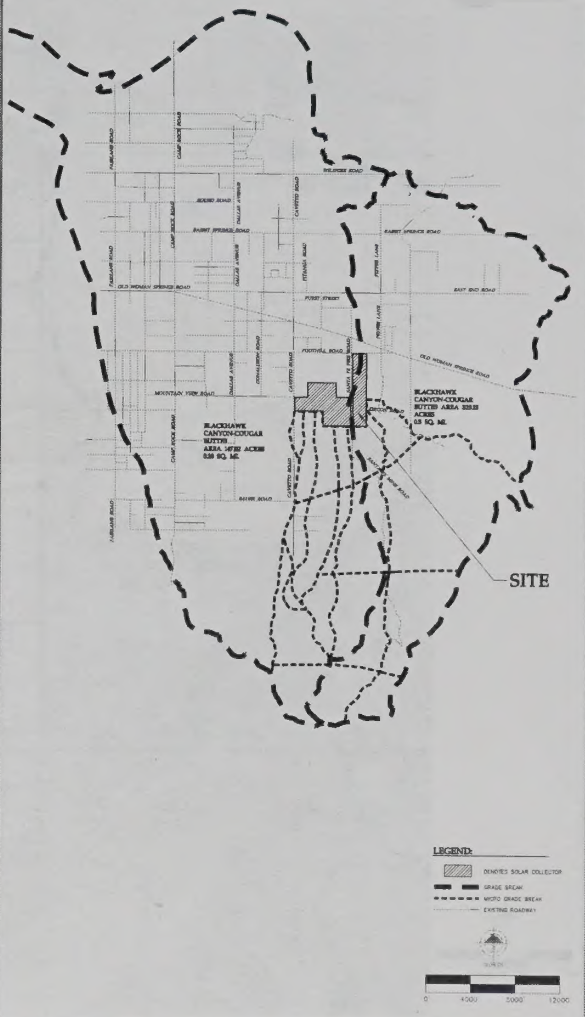
▨	DENOTES SOLAR COLLECTOR
▬ ▬	GRADE BREAK
──	PROPOSED ACCESS ROAD
— · · —	EXISTING STREAM
▧	OUTSIDE PROJECT BOUNDARY
Ω	DENOTES OUTFALL LOCATION
SA-	DENOTES SAMPLING AREA
	2' CONTOUR
	10' CONTOUR
→	FLOW DIRECTION

SWPPP LEGEND:
(CONTRACTOR TO USE THESE SYMBOLS TO UPDATE MAP)

LDYD	LAYDOWN YARD
BP	BATCH PLANT
O&M	O&M FACILITY
SUB	SUBSTATION
BORROW	BORROW PIT
STOCK	STOCKPILE

OUTFALL POINT	LATITUDE	LONGITUDE	CONTRIBUTES TO	ULTIMATE RECEIVING WATERS
1	34.41769940	-116.82272296	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
2	34.41779952	-116.82008123	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
3	34.41774693	-116.81903594	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
4	34.42058449	-116.81832950	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
5	34.42131177	-116.81887806	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
6	34.42127036	-116.81739551	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
7	34.42134176	-116.81640114	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
8	34.42133334	-116.81534341	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
9	34.42126013	-116.81455056	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
10	34.42125893	-116.81335283	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
11	34.42124612	-116.81267876	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
12	34.42125308	-116.81127061	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
13	34.41761212	-116.81044693	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
14	34.41759449	-116.80921345	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
15	34.41768135	-116.80705724	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
16	34.42164878	-116.80555718	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
17	34.42726908	[illegible]	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
18	34.42833760	-116.80518938	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
19	34.42837032	-116.80269949	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
20	34.42832567	-116.80216506	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)





BLACKHAWK CANYON-COUGAR BUTTES AREA 147.02 ACRES 0.20 SQ. MI.
BLACKHAWK CANYON-COUGAR BUTTES AREA 325.15 ACRES 0.5 SQ. MI.
OLD WOMAN SPRINGS ROAD
FOOTHILL ROAD
MOUNTAIN VIEW ROAD
ZIRCON ROAD
SITE
0
4000'
8000'
12000'

LEGEND:

▨	DENOTES SOLAR COLLECTOR
▬ ▬	GRADE BREAK
- - - -	MICRO GRADE BREAK
——	EXISTING ROADWAY

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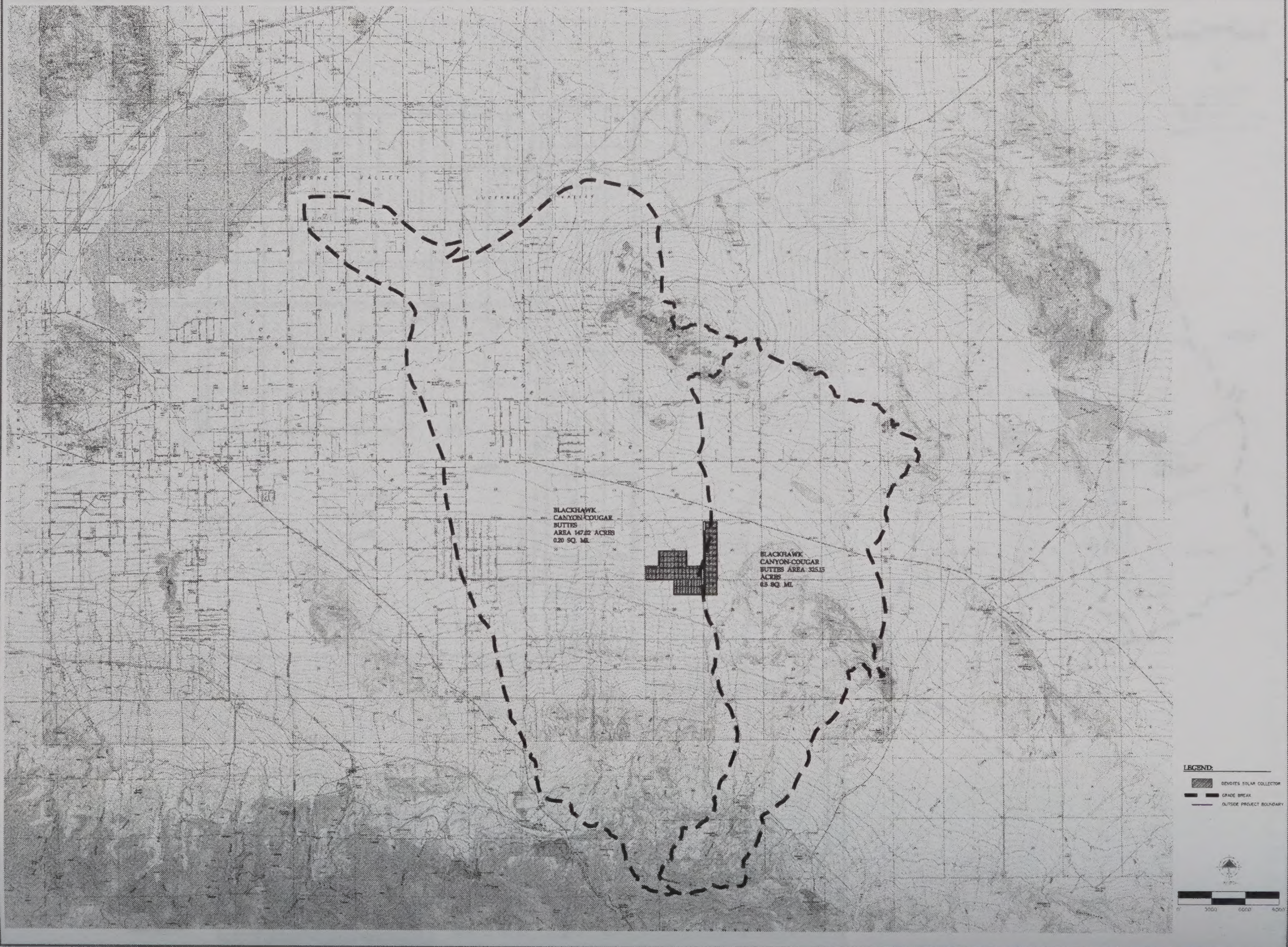
Lucerne Solar

DRAINAGE AREA MAP

1 OF 1


LUCERNE VALLEY
BLACKHAWK CANYON-COUGAR BUTTES AREA 147.02 ACRES 0.20 SQ. MI.
BLACKHAWK CANYON-COUGAR BUTTES AREA 325.15 ACRES 0.5 SQ. MI.
LEGEND:
DENOTES SOLAR COLLECTOR
GRADE BREAK
OUTSIDE PROJECT BOUNDARY
0'
3000
6000
9000'

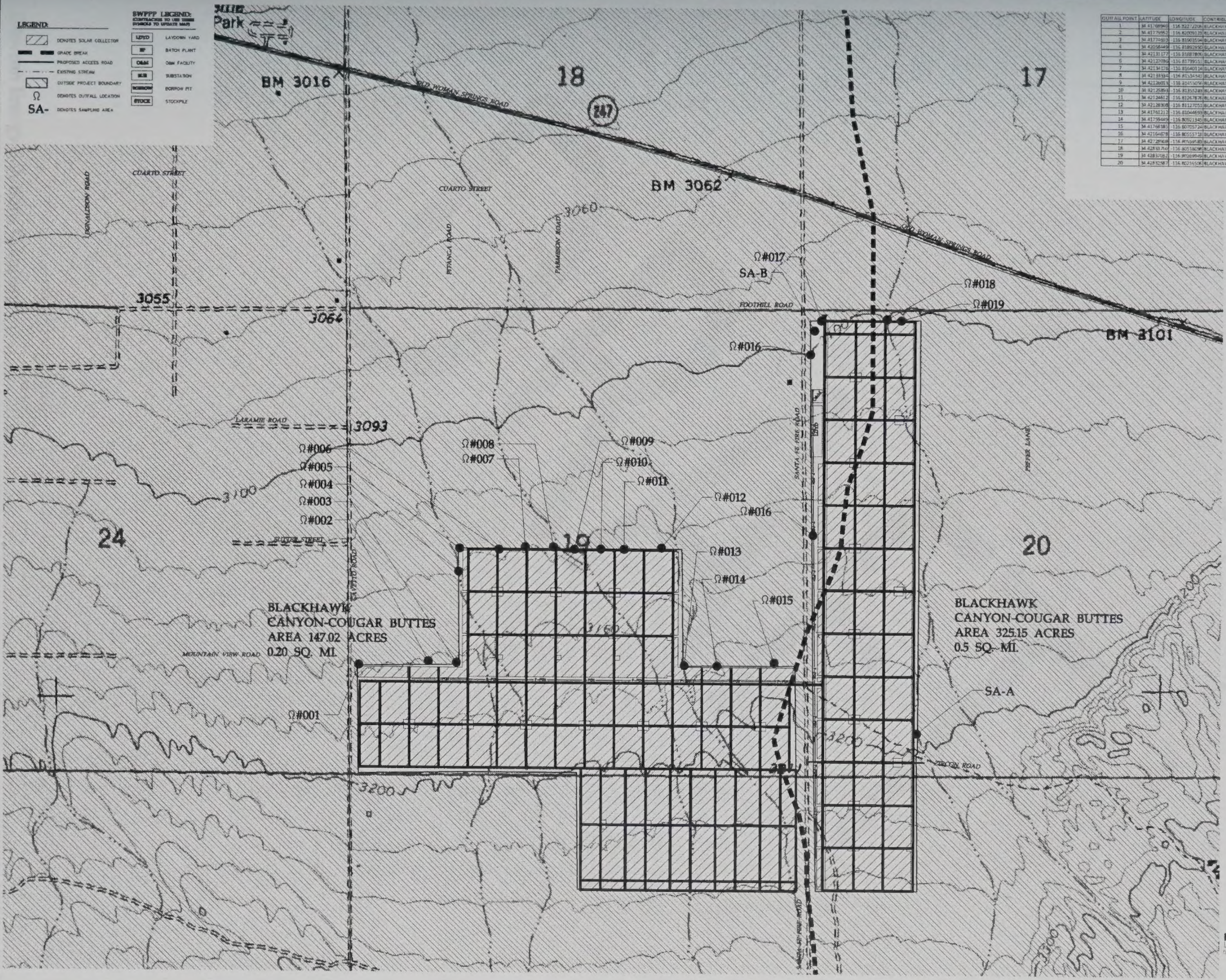
Westwood

Lucerne Solar

OVERALL USGS QUADRANGLE MAP

VICINITY MAP

2 OF 2



LEGEND:

▨	DENOTES SOLAR COLLECTOR
▬ ▬	GRADE BREAK
—	PROPOSED ACCESS ROAD
— · · —	EXISTING STREAM
▨	OUTSIDE PROJECT BOUNDARY
Ω	DENOTES OUTFALL LOCATION
SA-	DENOTES SAMPLING AREA

SWPPP LEGEND:
CONTRACTOR TO USE THESE SYMBOLS TO UPDATE MAP

LDYD	LAYDOWN YARD
BP	BATCH PLANT
O&M	O&M FACILITY
SUB	SUBSTATION
BORROW	BORROW PIT
STOCK	STOCKPILE

OUTFALL POINT	LATITUDE	LONGITUDE	CONTRIBUTES TO	ULTIMATE RECEIVING WATERS
1	34.41769940	-116.82272206	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
2	34.41779962	-116.82009123	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
3	34.41774603	-116.81903594	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
4	34.42058449	-116.81892950	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
5	34.42131177	-116.81887806	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
6	34.42127096	-116.81799551	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
7	34.42134176	-116.81640124	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
8	34.42138334	-116.81534541	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
9	34.42126013	-116.81455059	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
10	34.42125893	-116.81355288	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
11	34.42124612	-116.81267876	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
12	34.42128308	-116.81127051	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
13	34.41761212	-116.81044693	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
14	34.41759449	-116.80921345	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
15	34.41768185	-116.80705724	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
16	34.42164078	-116.80555718	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
17	34.42729408	-116.80569583	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
18	34.42833764	-116.80518098	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
19	34.42837182	-116.80269949	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)
20	34.42832587	-116.80255506	BLACKHAWK CANYON	LUCERNE LAKE (DRY LAKE)

Chevron

Westwood

Lucerne Solar

USGS QUADRANGLE MAP
VICINITY MAP

1 OF 2

Attachment B

Water Pollution Control Drawings (WPCDs)

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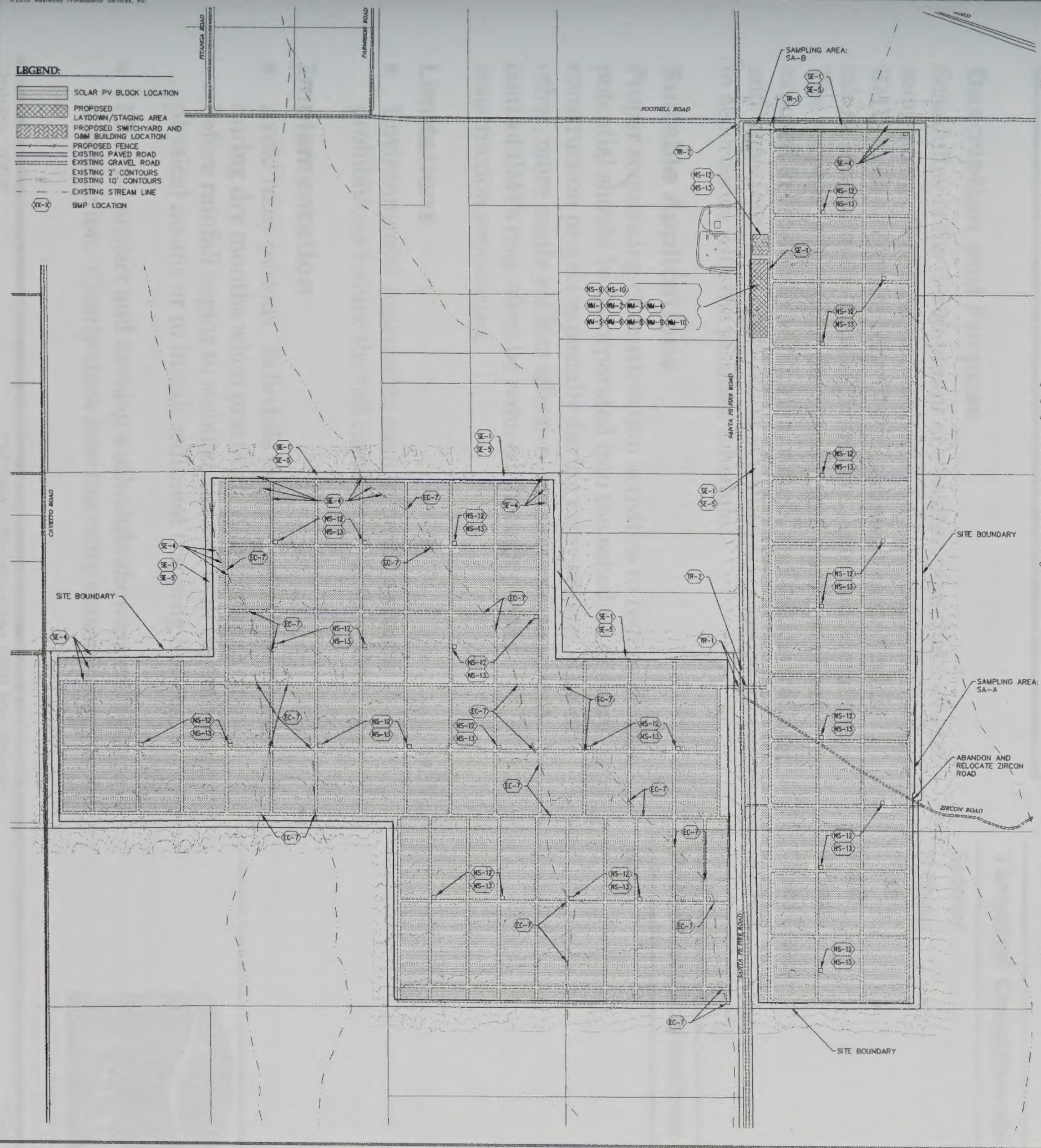

SWPPP CONSTRUCTION NOTES:

EC-1	SCHEDULING – SITE WIDE (DISTURBED LIMITS): REFER TO SECTION 500.3.4 AND ATTACHMENT B IN SWPPP
EC-2	PRESERVATION OF EXISTING VEGETATION – SITE WIDE (DISTURBED LIMITS): REFER TO SECTION 500.3.4 AND ATTACHMENT B IN SWPPP
EC-3	HYDRAULIC MULCH – SITE WIDE (DISTURBED LIMITS): REFER TO SECTION 500.3.4 AND ATTACHMENT B IN SWPPP
EC-4	HYDROSEEDING – SITE WIDE (DISTURBED LIMITS): REFER TO SECTION 500.3.4 AND ATTACHMENT B IN SWPPP
EC-5	SOIL BINDERS – SITE WIDE (DISTURBED LIMITS): REFER TO SECTION 500.3.4 AND ATTACHMENT B IN SWPPP
EC-7	GEOTEXTILES & MATS
SE-1	SILT FENCE
SE-4	CHECK DAM
SE-5	FIBER ROLLS
WE-1	WIND EROSION CONTROL – SITE WIDE (DISTURBED LIMITS): REFER TO SECTION 500.3.7 AND ATTACHMENT B IN SWPPP
TR-1	STABILIZED CONSTRUCTION ENTRANCE/EXIT
TR-2	STABILIZED CONSTRUCTION ROADWAY
NS-1	WATER CONSERVATION PRACTICES – SITE WIDE (DISTURBED LIMITS): REFER TO SECTION 500.3.8 AND ATTACHMENT B IN SWPPP
NS-6	ILLICIT CONNECTION/DISCHARGE – SITE WIDE (DISTURBED LIMITS): REFER TO SECTION 500.3.8 AND ATTACHMENT B IN SWPPP
NS-9	VEHICLE AND EQUIPMENT FUELING
NS-10	VEHICLE AND EQUIPMENT MAINTENANCE
NS-12	CONCRETE CURING
NS-13	CONCRETE FINISHING
WM-1	MATERIAL DELIVERY AND STORAGE
WM-2	MATERIAL USE
WM-3	STOCKPILE MANAGEMENT
WM-4	SPILL PREVENTION AND CONTROL
WM-5	SOLID WASTE MANAGEMENT
WM-6	HAZARDOUS WASTE MANAGEMENT
WM-8	CONCRETE WASTE MANAGEMENT
WM-9	SANITARY/SEPTIC WASTE MANAGEMENT
WM-10	LIQUID WASTE MANAGEMENT

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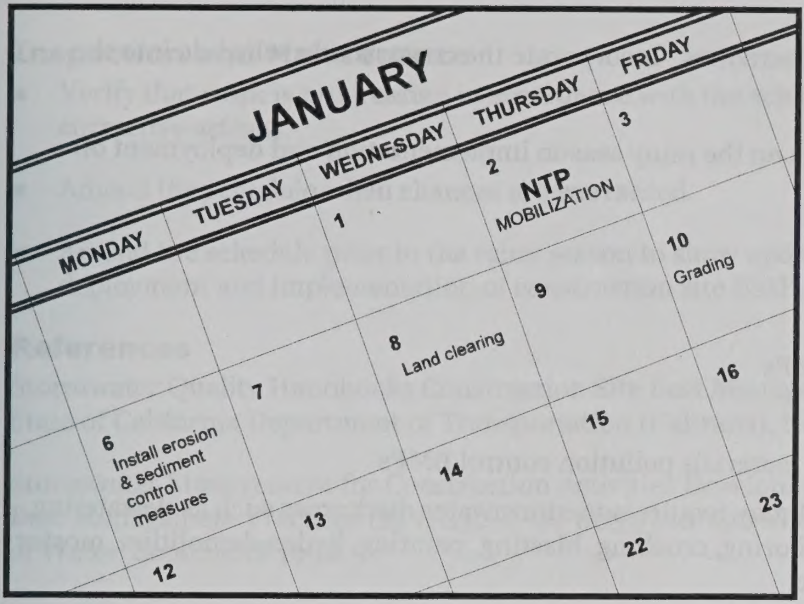
WATER POLLUTION CONTROL DRAWING

1 OF 1

Scheduling **EC-1**



Objectives

EC	Erosion Control	☑
SE	Sediment Control	☒
TR	Tracking Control	☒
WE	Wind Erosion Control	☒
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

Scheduling is the development of a written plan that includes sequencing of construction activities and the implementation of BMPs such as erosion control and sediment control while taking local climate (rainfall, wind, etc.) into consideration. The purpose is to reduce the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking, and to perform the construction activities and control practices in accordance with the planned schedule.

Suitable Applications

Proper sequencing of construction activities to reduce erosion potential should be incorporated into the schedule of every construction project especially during rainy season. Use of other, more costly yet less effective, erosion and sediment control BMPs may often be reduced through proper construction sequencing.

Limitations

- Environmental constraints such as nesting season prohibitions reduce the full capabilities of this BMP.

Implementation

- Avoid rainy periods. Schedule major grading operations during dry months when practical. Allow enough time before rainfall begins to stabilize the soil with vegetation or physical means or to install sediment trapping devices.
- Plan the project and develop a schedule showing each phase of construction. Clearly show how the rainy season relates to soil

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disturbing and re-stabilization activities. Incorporate the construction schedule into the SWPPP.

- Include on the schedule, details on the rainy season implementation and deployment of:
  - Erosion control BMPs
  - Sediment control BMPs
  - Tracking control BMPs
  - Wind erosion control BMPs
  - Non-stormwater BMPs
  - Waste management and materials pollution control BMPs
- Include dates for activities that may require non-stormwater discharges such as dewatering, sawcutting, grinding, drilling, boring, crushing, blasting, painting, hydro-demolition, mortar mixing, pavement cleaning, etc.
- Work out the sequencing and timetable for the start and completion of each item such as site clearing and grubbing, grading, excavation, paving, foundation pouring utilities installation, etc., to minimize the active construction area during the rainy season.
  - Sequence trenching activities so that most open portions are closed before new trenching begins.
  - Incorporate staged seeding and re-vegetation of graded slopes as work progresses.
  - Schedule establishment of permanent vegetation during appropriate planting time for specified vegetation.
- Non-active areas should be stabilized as soon as practical after the cessation of soil disturbing activities or one day prior to the onset of precipitation.
- Monitor the weather forecast for rainfall.
- When rainfall is predicted, adjust the construction schedule to allow the implementation of soil stabilization and sediment treatment controls on all disturbed areas prior to the onset of rain.
- Be prepared year round to deploy erosion control and sediment control BMPs. Erosion may be caused during dry seasons by un-seasonal rainfall, wind, and vehicle tracking. Keep the site stabilized year round, and retain and maintain rainy season sediment trapping devices in operational condition.
- Apply permanent erosion control to areas deemed substantially complete during the project's defined seeding window.

Costs

Construction scheduling to reduce erosion may increase other construction costs due to reduced economies of scale in performing site grading. The cost effectiveness of scheduling techniques should be compared with the other less effective erosion and sedimentation controls to achieve a cost effective balance.

Inspection and Maintenance

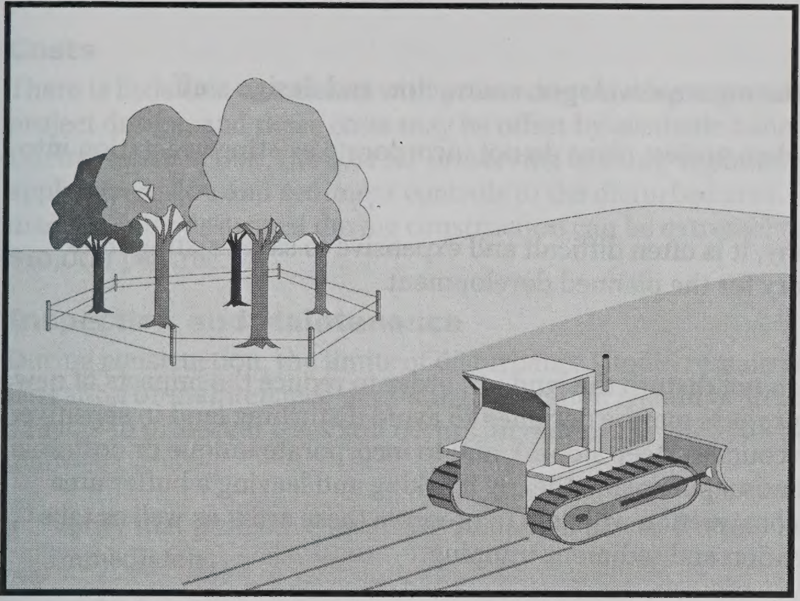
- Verify that work is progressing in accordance with the schedule. If progress deviates, take corrective actions.
- Amend the schedule when changes are warranted.
- Amend the schedule prior to the rainy season to show updated information on the deployment and implementation of construction site BMPs.

References

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities Developing Pollution Prevention Plans and Best Management Practices (EPA 832-R-92-005), U.S. Environmental Protection Agency, Office of Water, September 1992.

Preservation Of Existing Vegetation EC-2



Description and Purpose

Carefully planned preservation of existing vegetation minimizes the potential of removing or injuring existing trees, vines, shrubs, and grasses that protect soil from erosion.

Suitable Applications

Preservation of existing vegetation is suitable for use on most projects. Large project sites often provide the greatest opportunity for use of this BMP. Suitable applications include the following:

- Areas within the site where no construction activity occurs, or occurs at a later date. This BMP is especially suitable to multi year projects where grading can be phased.
- Areas where natural vegetation exists and is designated for preservation. Such areas often include steep slopes, watercourse, and building sites in wooded areas.
- Areas where local, state, and federal government require preservation, such as vernal pools, wetlands, marshes, certain oak trees, etc. These areas are usually designated on the plans, or in the specifications, permits, or environmental documents.
- Where vegetation designated for ultimate removal can be temporarily preserved and be utilized for erosion control and sediment control.

Objectives

EC	Erosion Control	☑
SE	Sediment Control	
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

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Limitations

- Requires forward planning by the owner/developer, contractor, and design staff.
- Limited opportunities for use when project plans do not incorporate existing vegetation into the site design.
- For sites with diverse topography, it is often difficult and expensive to save existing trees while grading the site satisfactory for the planned development.

Implementation

The best way to prevent erosion is to not disturb the land. In order to reduce the impacts of new development and redevelopment, projects may be designed to avoid disturbing land in sensitive areas of the site (e.g., natural watercourses, steep slopes), and to incorporate unique or desirable existing vegetation into the site's landscaping plan. Clearly marking and leaving a buffer area around these unique areas during construction will help to preserve these areas as well as take advantage of natural erosion prevention and sediment trapping.

Existing vegetation to be preserved on the site must be protected from mechanical and other injury while the land is being developed. The purpose of protecting existing vegetation is to ensure the survival of desirable vegetation for shade, beautification, and erosion control. Mature vegetation has extensive root systems that help to hold soil in place, thus reducing erosion. In addition, vegetation helps keep soil from drying rapidly and becoming susceptible to erosion. To effectively save existing vegetation, no disturbances of any kind should be allowed within a defined area around the vegetation. For trees, no construction activity should occur within the drip line of the tree.

Timing

- Provide for preservation of existing vegetation prior to the commencement of clearing and grubbing operations or other soil disturbing activities in areas where no construction activity is planned or will occur at a later date.

Design and Layout

- Mark areas to be preserved with temporary fencing. Include sufficient setback to protect roots.
  - Orange colored plastic mesh fencing works well.
  - Use appropriate fence posts and adequate post spacing and depth to completely support the fence in an upright position.
- Locate temporary roadways, stockpiles, and layout areas to avoid stands of trees, shrubs, and grass.
- Consider the impact of grade changes to existing vegetation and the root zone.
- Maintain existing irrigation systems where feasible. Temporary irrigation may be required.
- Instruct employees and subcontractors to honor protective devices. Prohibit heavy equipment, vehicular traffic, or storage of construction materials within the protected area.

Costs

There is little cost associated with preserving existing vegetation if properly planned during the project design, and these costs may be offset by aesthetic benefits that enhance property values. During construction, the cost for preserving existing vegetation will likely be less than the cost of applying erosion and sediment controls to the disturbed area. Replacing vegetation inadvertently destroyed during construction can be extremely expensive, sometimes in excess of $10,000 per tree.

Inspection and Maintenance

During construction, the limits of disturbance should remain clearly marked at all times. Irrigation or maintenance of existing vegetation should be described in the landscaping plan. If damage to protected trees still occurs, maintenance guidelines described below should be followed:

- Verify that protective measures remain in place. Restore damaged protection measures immediately.
- Serious tree injuries shall be attended to by an arborist.
- Damage to the crown, trunk, or root system of a retained tree shall be repaired immediately.
- Trench as far from tree trunks as possible, usually outside of the tree drip line or canopy. Curve trenches around trees to avoid large roots or root concentrations. If roots are encountered, consider tunneling under them. When trenching or tunneling near or under trees to be retained, place tunnels at least 18 in. below the ground surface, and not below the tree center to minimize impact on the roots.
- Do not leave tree roots exposed to air. Cover exposed roots with soil as soon as possible. If soil covering is not practical, protect exposed roots with wet burlap or peat moss until the tunnel or trench is ready for backfill.
- Cleanly remove the ends of damaged roots with a smooth cut.
- Fill trenches and tunnels as soon as possible. Careful filling and tamping will eliminate air spaces in the soil, which can damage roots.
- If bark damage occurs, cut back all loosened bark into the undamaged area, with the cut tapered at the top and bottom and drainage provided at the base of the wood. Limit cutting the undamaged area as much as possible.
- Aerate soil that has been compacted over a trees root zone by punching holes 12 in. deep with an iron bar, and moving the bar back and forth until the soil is loosened. Place holes 18 in. apart throughout the area of compacted soil under the tree crown.
- Fertilization
  - Fertilize stressed or damaged broadleaf trees to aid recovery.
  - Fertilize trees in the late fall or early spring.

  - Apply fertilizer to the soil over the feeder roots and in accordance with label instructions, but never closer than 3 ft to the trunk. Increase the fertilized area by one-fourth of the crown area for conifers that have extended root systems.

- Retain protective measures until all other construction activity is complete to avoid damage during site cleanup and stabilization.

References

County of Sacramento Tree Preservation Ordinance, September 1981.

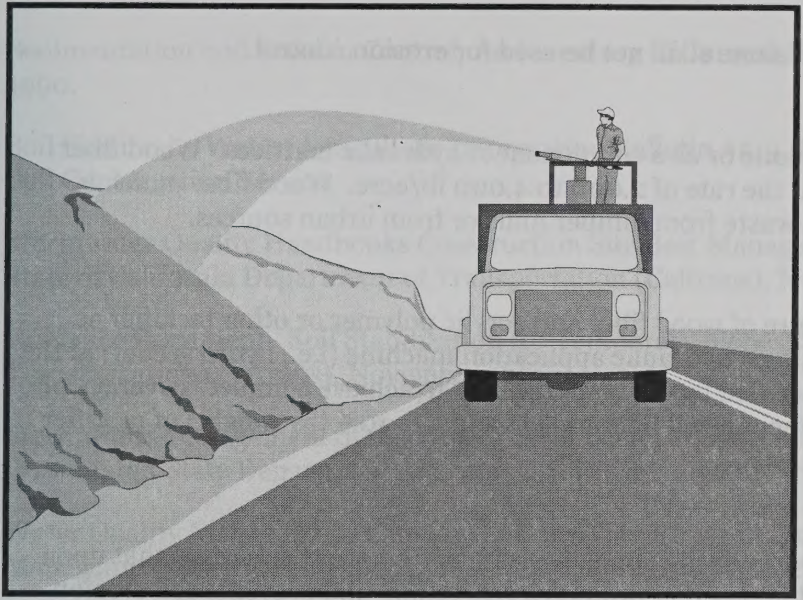
Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management of the Puget Sound Basin, Technical Manual, Publication #91-75, Washington State Department of Ecology, February 1992.

Water Quality Management Plan for The Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.

Hydraulic Mulch

EC-3



Description and Purpose

Hydraulic mulch consists of applying a mixture of shredded wood fiber or a hydraulic matrix, and a stabilizing emulsion or tackifier with hydro-mulching equipment, which temporarily protects exposed soil from erosion by raindrop impact or wind.

Suitable Applications

Hydraulic mulch is suitable for soil disturbed areas requiring temporary protection until permanent stabilization is established, and disturbed areas that will be re-disturbed following an extended period of inactivity.

Limitations

Wood fiber hydraulic mulches are generally short lived and need 24 hours to dry before rainfall occurs to be effective. May require a second application in order to remain effective for an entire rainy season.

Implementation

- Prior to application, roughen embankment and fill areas by rolling with a crimping or punching type roller or by track walking. Track walking shall only be used where other methods are impractical.
- To be effective, hydraulic matrices require 24 hours to dry before rainfall occurs.
- Avoid mulch over spray onto roads, sidewalks, drainage channels, existing vegetation, etc.

Objectives

EC	Erosion Control	☑
SE	Sediment Control	
TR	Tracking Control	
WE	Wind Erosion Control	☒
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

EC-4 Hydroseeding

EC-5 Soil Binders

EC-6 Straw Mulch

EC-7 Geotextiles and Mats

EC-8 Wood Mulching

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- Paper based hydraulic mulches alone shall not be used for erosion control.

Hydraulic Mulches

Wood fiber mulch can be applied alone or as a component of hydraulic matrices. Wood fiber applied alone is typically applied at the rate of 2,000 to 4,000 lb/acre. Wood fiber mulch is manufactured from wood or wood waste from lumber mills or from urban sources.

Hydraulic Matrices

Hydraulic matrices include a mixture of wood fiber and acrylic polymer or other tackifier as binder. Apply as a liquid slurry using a hydraulic application machine (i.e., hydro seeder) at the following minimum rates, or as specified by the manufacturer to achieve complete coverage of the target area: 2,000 to 4,000 lb/acre wood fiber mulch, and 5 to 10% (by weight) of tackifier (acrylic copolymer, guar, psyllium, etc.)

Bonded Fiber Matrix

Bonded fiber matrix (BFM) is a hydraulically applied system of fibers and adhesives that upon drying forms an erosion resistant blanket that promotes vegetation, and prevents soil erosion. BFMs are typically applied at rates from 3,000 lb/acre to 4,000 lb/acre based on the manufacturer's recommendation. A biodegradable BFM is composed of materials that are 100% biodegradable. The binder in the BFM should also be biodegradable and should not dissolve or disperse upon re-wetting. Typically, biodegradable BFMs should not be applied immediately before, during or immediately after rainfall if the soil is saturated. Depending on the product, BFMs typically require 12 to 24 hours to dry and become effective.

Costs

Average cost for installation of wood fiber mulch is $900/acre. Average cost for installation of BFM is $5,500/acre.

Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.

- Areas where erosion is evident shall be repaired and BMPs re-applied as soon as possible. Care should be exercised to minimize the damage to protected areas while making repairs, as any area damaged will require re-application of BMPs.

- Maintain an unbroken, temporary mulched ground cover throughout the period of construction when the soils are not being reworked.

References

Controlling Erosion of Construction Sites Agricultural Information #347, U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) (formerly Soil Conservation Service – SCS).

Guides for Erosion and Sediment Control in California, USDA Soils Conservation Service, January 1991.

Manual of Standards of Erosion and Sediment Control Measures, Association of Bay Area Governments, May 1995.

Sedimentation and Erosion Control, An Inventory of Current Practices Draft, US EPA, April 1990.

Soil Erosion by Water, Agriculture Information Bulletin #513, U.S. Department of Agriculture, Soil Conservation Service.

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

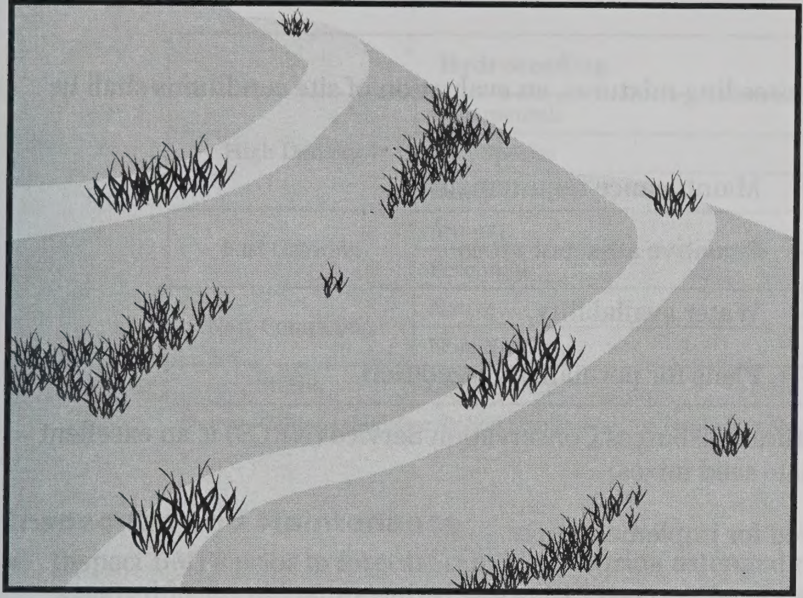
Guidance Document: Soil Stabilization for Temporary Slopes, State of California Department of Transportation (Caltrans), November 1999

Stormwater Management of the Puget Sound Basin, Technical Manual, Publication #91-75, Washington State Department of Ecology, February 1992.

Water Quality Management Plan for the Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.

Hydroseeding

EC-4



Objectives

EC	Erosion Control	☑
SE	Sediment Control	
TR	Tracking Control	
WE	Wind Erosion Control	☒
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

EC-3 Hydraulic Mulch

EC-5 Soil Binders

EC-6 Straw Mulch

EC-7 Geotextiles and Mats

EC-8 Wood Mulching

Description and Purpose

Hydroseeding typically consists of applying a mixture of wood fiber, seed, fertilizer, and stabilizing emulsion with hydromulch equipment, to temporarily protect exposed soils from erosion by water and wind.

Suitable Applications

Hydroseeding is suitable for soil disturbed areas requiring temporary protection until permanent stabilization is established, and disturbed areas that will be re-disturbed following an extended period of inactivity.

Limitations

- Hydroseeding may be used alone only when there is sufficient time in the season to ensure adequate vegetation establishment and coverage to provide adequate erosion control. Otherwise, hydroseeding must be used in conjunction with mulching (i.e., straw mulch).
- Steep slopes are difficult to protect with temporary seeding.
- Temporary seeding may not be appropriate in dry periods without supplemental irrigation.
- Temporary vegetation may have to be removed before permanent vegetation is applied.
- Temporary vegetation is not appropriate for short term inactivity.

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Implementation

In order to select appropriate hydroseeding mixtures, an evaluation of site conditions shall be performed with respect to:

- Soil conditions
- Site topography
- Season and climate
- Vegetation types
- Maintenance requirements
- Sensitive adjacent areas
- Water availability
- Plans for permanent vegetation

The local office of the U.S.D.A. Natural Resources Conservation Service (NRCS) is an excellent source of information on appropriate seed mixes.

The following steps shall be followed for implementation:

- Avoid use of hydroseeding in areas where the BMP would be incompatible with future earthwork activities and would have to be removed.
- Hydroseeding can be accomplished using a multiple step or one step process. The multiple step process ensures maximum direct contact of the seeds to soil. When the one step process is used to apply the mixture of fiber, seed, etc., the seed rate shall be increased to compensate for all seeds not having direct contact with the soil.
- Prior to application, roughen the area to be seeded with the furrows trending along the contours.
- Apply a straw mulch to keep seeds in place and to moderate soil moisture and temperature until the seeds germinate and grow.
- All seeds shall be in conformance with the California State Seed Law of the Department of Agriculture. Each seed bag shall be delivered to the site sealed and clearly marked as to species, purity, percent germination, dealer's guarantee, and dates of test. The container shall be labeled to clearly reflect the amount of Pure Live Seed (PLS) contained. All legume seed shall be pellet inoculated. Inoculant sources shall be species specific and shall be applied at a rate of 2 lb of inoculant per 100 lb seed.
- Commercial fertilizer shall conform to the requirements of the California Food and Agricultural Code. Fertilizer shall be pelleted or granular form.
- Follow up applications shall be made as needed to cover weak spots and to maintain adequate soil protection.
- Avoid over spray onto roads, sidewalks, drainage channels, existing vegetation, etc.

Costs

Average cost for installation and maintenance may vary from as low as $300 per acre for flat slopes and stable soils, to $1600 per acre for moderate to steep slopes and/or erosive soils.

Hydroseeding		Installed Cost per Acre
High Density	Ornamentals	$400 - $1600
	Turf Species	$350
	Bunch Grasses	$300 - $1300
Fast Growing	Annual	$350 - $650
	Perennial	$300 - $800
Non-Competing	Native	$300 - $1600
	Non-Native	$400 - $500
Sterile	Cereal Grain	$500

Source: Caltrans Guidance for Soil Stabilization for Temporary Slopes, Nov. 1999

Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- Areas where erosion is evident shall be repaired and BMPs re-applied as soon as possible. Care should be exercised to minimize the damage to protected areas while making repairs, as any area damaged will require re-application of BMPs.
- Where seeds fail to germinate, or they germinate and die, the area must be re-seeded, fertilized, and mulched within the planting season, using not less than half the original application rates.
- Irrigation systems, if applicable, should be inspected daily while in use to identify system malfunctions and line breaks. When line breaks are detected, the system must be shut down immediately and breaks repaired before the system is put back into operation.
- Irrigation systems shall be inspected for complete coverage and adjusted as needed to maintain complete coverage.

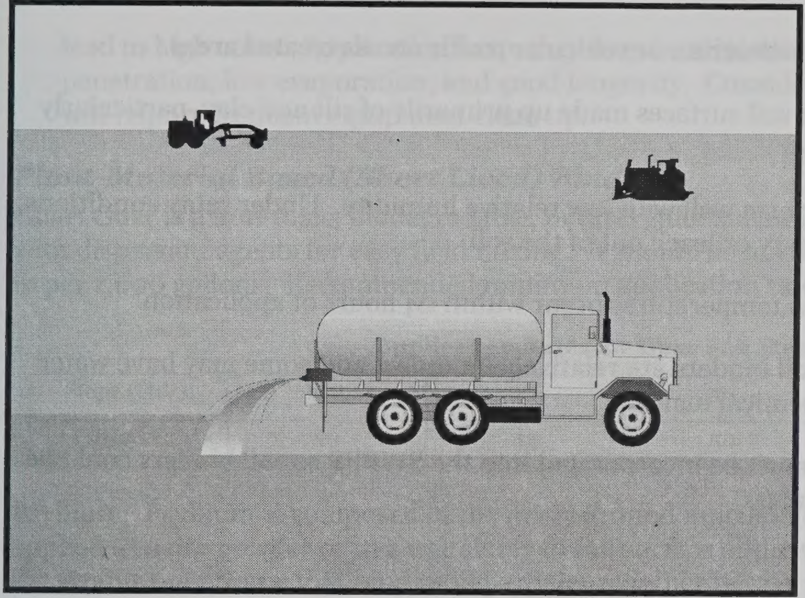
References

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Guidance Document: Soil Stabilization for Temporary Slopes, State of California Department of Transportation (Caltrans), November 1999.

Soil Binders

EC-5



Description and Purpose

Soil binders consist of applying and maintaining a soil stabilizer to exposed soil surfaces. Soil binders are materials applied to the soil surface to temporarily prevent water induced erosion of exposed soils on construction sites. Soil binders also prevent wind erosion.

Suitable Applications

Soil binders are typically applied to disturbed areas requiring short term temporary protection. Because soil binders can often be incorporated into the work, they are a good alternative to mulches in areas where grading activities will soon resume. Soil binders are also suitable for use on stockpiles.

Limitations

- Soil binders are temporary in nature and may need reapplication.
- Soil binders require a minimum curing time until fully effective, as prescribed by the manufacturer. Curing time may be 24 hours or longer. Soil binders may need reapplication after a storm event.
- Soil binders will generally experience spot failures during heavy rainfall events. If runoff penetrates the soil at the top of a slope treated with a soil binder, it is likely that the runoff will undercut the stabilized soil layer and discharge at a point further down slope.

Objectives

EC	Erosion Control	☑
SE	Sediment Control	
TR	Tracking Control	
WE	Wind Erosion Control	☒
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

EC-3 Hydraulic Mulch

EC-4 Hydroseeding

EC-6 Straw Mulch

EC-7 Geotextiles and Mats

EC-8 Wood Mulching

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- Soil binders do not hold up to pedestrian or vehicular traffic across treated areas.
- Soil binders may not penetrate soil surfaces made up primarily of silt and clay, particularly when compacted.
- Some soil binders may not perform well with low relative humidity. Under rainy conditions, some agents may become slippery or leach out of the soil.
- Soil binders may not cure if low temperatures occur within 24 hours of application.
- The water quality impacts of soil binders are relatively unknown and some may have water quality impacts due to their chemical makeup.
- A sampling and analysis plan must be incorporated into the SWPPP as soil binders could be a source of non-visible pollutants.

Implementation

General Considerations

- Regional soil types will dictate appropriate soil binders to be used.
- A soil binder must be environmentally benign (non-toxic to plant and animal life), easy to apply, easy to maintain, economical, and should not stain paved or painted surfaces. Soil binders should not pollute stormwater.
- Some soil binders may not be compatible with existing vegetation.
- Performance of soil binders depends on temperature, humidity, and traffic across treated areas.
- Avoid over spray onto roads, sidewalks, drainage channels, existing vegetation, etc.

Selecting a Soil Binder

Properties of common soil binders used for erosion control are provided on Table 1 at the end of this BMP. Use Table 1 to select an appropriate soil binder. Refer to WE-1, Wind Erosion Control, for dust control soil binders.

Factors to consider when selecting a soil binder include the following:

- Suitability to situation - Consider where the soil binder will be applied, if it needs a high resistance to leaching or abrasion, and whether it needs to be compatible with any existing vegetation. Determine the length of time soil stabilization will be needed, and if the soil binder will be placed in an area where it will degrade rapidly. In general, slope steepness is not a discriminating factor for the listed soil binders.
- Soil types and surface materials - Fines and moisture content are key properties of surface materials. Consider a soil binder's ability to penetrate, likelihood of leaching, and ability to form a surface crust on the surface materials.
- Frequency of application - The frequency of application can be affected by subgrade conditions, surface type, climate, and maintenance schedule. Frequent applications could

lead to high costs. Application frequency may be minimized if the soil binder has good penetration, low evaporation, and good longevity. Consider also that frequent application will require frequent equipment clean up.

Plant-Material Based (Short Lived) Binders

Guar: Guar is a non-toxic, biodegradable, natural galactomannan based hydrocolloid treated with dispersant agents for easy field mixing. It should be mixed with water at the rate of 11 to 15 lb per 1,000 gallons. Recommended minimum application rates are as follows:

Application Rates for Guar Soil Stabilizer

Slope (H:V):	Flat	4:1	3:1	2:1	1:1
lb/acre:	40	45	50	60	70

Psyllium: Psyllium is composed of the finely ground muciloid coating of plantago seeds that is applied as a dry powder or in a wet slurry to the surface of the soil. It dries to form a firm but rewettable membrane that binds soil particles together but permits germination and growth of seed. Psyllium requires 12 to 18 hours drying time. Application rates should be from 80 to 200 lb/acre, with enough water in solution to allow for a uniform slurry flow.

Starch: Starch is non-ionic, cold water soluble (pre-gelatinized) granular cornstarch. The material is mixed with water and applied at the rate of 150 lb/acre. Approximate drying time is 9 to 12 hours.

Plant-Material Based (Long Lived) Binders

Pitch and Rosin Emulsion: Generally, a non-ionic pitch and rosin emulsion has a minimum solids content of 48%. The rosin should be a minimum of 26% of the total solids content. The soil stabilizer should be non-corrosive, water dilutable emulsion that upon application cures to a water insoluble binding and cementing agent. For soil erosion control applications, the emulsion is diluted and should be applied as follows:

- For clayey soil: 5 parts water to 1 part emulsion
- For sandy soil: 10 parts water to 1 part emulsion

Application can be by water truck or hydraulic seeder with the emulsion and product mixture applied at the rate specified by the manufacturer.

Polymeric Emulsion Blend Binders

Acrylic Copolymers and Polymers: Polymeric soil stabilizers should consist of a liquid or solid polymer or copolymer with an acrylic base that contains a minimum of 55% solids. The polymeric compound should be handled and mixed in a manner that will not cause foaming or should contain an anti-foaming agent. The polymeric emulsion should not exceed its shelf life or expiration date; manufacturers should provide the expiration date. Polymeric soil stabilizer should be readily miscible in water, non-injurious to seed or animal life, non-flammable, should provide surface soil stabilization for various soil types without totally inhibiting water infiltration, and should not re-emulsify when cured. The applied compound should air cure within a maximum of 36 to 48 hours. Liquid copolymer should be diluted at a rate of 10 parts water to 1 part polymer and the mixture applied to soil at a rate of 1,175 gallons/acre.

Liquid Polymers of Methacrylates and Acrylates: This material consists of a tackifier/sealer that is a liquid polymer of methacrylates and acrylates. It is an aqueous 100% acrylic emulsion blend of 40% solids by volume that is free from styrene, acetate, vinyl, ethoxylated surfactants or silicates. For soil stabilization applications, it is diluted with water in accordance with manufacturer's recommendations, and applied with a hydraulic seeder at the rate of 20 gallons/acre. Drying time is 12 to 18 hours after application.

Copolymers of Sodium Acrylates and Acrylamides: These materials are non-toxic, dry powders that are copolymers of sodium acrylate and acrylamide. They are mixed with water and applied to the soil surface for erosion control at rates that are determined by slope gradient:

Slope Gradient (H:V)	lb/acre
Flat to 5:1	3.0 – 5.0
5:1 to 3:1	5.0 – 10.0
2:2 to 1:1	10.0 – 20.0

Poly-Acrylamide and Copolymer of Acrylamide: Linear copolymer polyacrylamide is packaged as a dry flowable solid. When used as a stand alone stabilizer, it is diluted at a rate of 11lb/1,000 gal of water and applied at the rate of 5.0 lb/acre.

Hydro-Colloid Polymers: Hydro-Colloid Polymers are various combinations of dry flowable poly-acrylamides, copolymers and hydro-colloid polymers that are mixed with water and applied to the soil surface at rates of 55 to 60 lb/acre. Drying times are 0 to 4 hours.

Cementitious-Based Binders

Gypsum: This is a formulated gypsum based product that readily mixes with water and mulch to form a thin protective crust on the soil surface. It is composed of high purity gypsum that is ground, calcined and processed into calcium sulfate hemihydrate with a minimum purity of 86%. It is mixed in a hydraulic seeder and applied at rates 4,000 to 12,000 lb/acre. Drying time is 4 to 8 hours.

Applying Soil Binders

After selecting an appropriate soil binder, the untreated soil surface must be prepared before applying the soil binder. The untreated soil surface must contain sufficient moisture to assist the agent in achieving uniform distribution. In general, the following steps should be followed:

- Follow manufacturer's written recommendations for application rates, pre-wetting of application area, and cleaning of equipment after use.
- Prior to application, roughen embankment and fill areas.
- Consider the drying time for the selected soil binder and apply with sufficient time before anticipated rainfall. Soil binders should not be applied during or immediately before rainfall.
- Avoid over spray onto roads, sidewalks, drainage channels, sound walls, existing vegetation, etc.

- Soil binders should not be applied to frozen soil, areas with standing water, under freezing or rainy conditions, or when the temperature is below 40°F during the curing period.

- More than one treatment is often necessary, although the second treatment may be diluted or have a lower application rate.

- Generally, soil binders require a minimum curing time of 24 hours before they are fully effective. Refer to manufacturer's instructions for specific cure time.

- For liquid agents:
  - Crown or slope ground to avoid ponding.
  - Uniformly pre-wet ground at 0.03 to 0.3 gal/yd^2 or according to manufacturer's recommendations.
  - Apply solution under pressure. Overlap solution 6 to 12 in.
  - Allow treated area to cure for the time recommended by the manufacturer; typically at least 24 hours.
  - Apply second treatment before first treatment becomes ineffective, using 50% application rate.
  - In low humidities, reactivate chemicals by re-wetting with water at 0.1 to 0.2 gal/yd^2.

Costs

Costs vary according to the soil stabilizer selected for implementation. The following are approximate costs:

Soil Binder	Cost per Acre
Plant-Material Based (Short Lived) Binders	$400
Plant-Material Based (Long Lived) Binders	$1,200
Polymeric Emulsion Blend Binders	$400 (1)
Cementitious-Based Binders	$800

(1) $1,200 for Acrylic polymers and copolymers

Source: Caltrans Guidance for Soil Stabilization for Temporary Slopes, Nov. 1999

Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.

- Areas where erosion is evident shall be repaired and BMPs re-applied as soon as possible. Care should be exercised to minimize the damage to protected areas while making repairs, as any area damaged will require re-application of BMPs.

- Reapply the selected soil binder as needed to maintain effectiveness.

References

Manual of Standards of Erosion and Sediment Control Measures, Association of Bay Area Governments, May 1995.

Sedimentation and Erosion Control, An Inventory of Current Practices Draft, US EPA, April 1990.

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

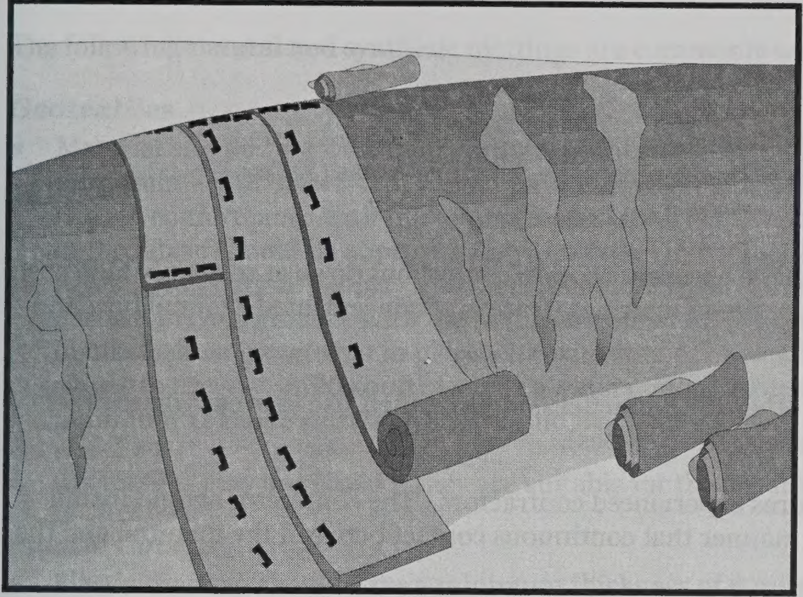
Guidance Document: Soil Stabilization for Temporary Slopes, State of California Department of Transportation (Caltrans), November 1999.

Stormwater Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.

Table 1 Properties of Soil Binders for Erosion Control

Evaluation Criteria	Binder Type			
	Plant Material Based (Short Lived)	**Plant Material Based (Long Lived)**	**Polymeric Emulsion Blends**	**Cementitious-Based Binders**
Relative Cost	Low	Low	Low	Low
Resistance to Leaching	High	High	Low to Moderate	Moderate
Resistance to Abrasion	Moderate	Low	Moderate to High	Moderate to High
Longevity	Short to Medium	Medium	Medium to Long	Medium
Minimum Curing Time before Rain	9 to 18 hours	19 to 24 hours	0 to 24 hours	4 to 8 hours
Compatibility with Existing Vegetation	Good	Poor	Poor	Poor
Mode of Degradation	Biodegradable	Biodegradable	Photodegradable/ Chemically Degradable	Photodegradable/ Chemically Degradable
Labor Intensive	No	No	No	No
Specialized Application Equipment	Water Truck or Hydraulic Mulcher	Water Truck or Hydraulic Mulcher	Water Truck or Hydraulic Mulcher	Water Truck or Hydraulic Mulcher
Liquid/Powder	Powder	Liquid	Liquid/Powder	Powder
Surface Crusting	Yes, but dissolves on rewetting	Yes	Yes, but dissolves on rewetting	Yes
Clean Up	Water	Water	Water	Water
Erosion Control Application Rate	Varies (1)	Varies (1)	Varies (1)	4,000 to 12,000 lbs/acre

(1) See Implementation for specific rates.



Objectives

EC	Erosion Control	☑
SE	Sediment Control	
TR	Tracking Control	
WE	Wind Erosion Control	3
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

EC-3 Hydraulic Mulch
EC-4 Hydroseeding
EC-5 Soil Binders
EC-6 Straw Mulch
EC-8 Wood Mulching

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Description and Purpose

Mattings of natural materials are used to cover the soil surface to reduce erosion from rainfall impact, hold soil in place, and absorb and hold moisture near the soil surface. Additionally, matting may be used to stabilize soils until vegetation is established.

Suitable Applications

Mattings are commonly applied on short, steep slopes where erosion hazard is high and vegetation will be slow to establish. Mattings are also used on stream banks where moving water at velocities between 3 ft/s and 6 ft/s are likely to wash out new vegetation, and in areas where the soil surface is disturbed and where existing vegetation has been removed. Matting may also be used when seeding cannot occur (e.g., late season construction and/or the arrival of an early rain season). Erosion control matting should be considered when the soils are fine grained and potentially erosive. These measures should be considered in the following situations.

- Steep slopes, generally steeper than 3:1 (H:V)
- Slopes where the erosion potential is high
- Slopes and disturbed soils where mulch must be anchored
- Disturbed areas where plants are slow to develop
- Channels with flows exceeding 3.3 ft/s

- Channels to be vegetated
- Stockpiles
- Slopes adjacent to water bodies of Environmentally Sensitive Areas (ESAs)

Limitations

- Properly installed mattings provide excellent erosion control but do so at relatively high cost. This high cost typically limits the use of mattings to areas of concentrated channel flow and steep slopes.
- Mattings are more costly than other BMP practices, limiting their use to areas where other BMPs are ineffective (e.g. channels, steep slopes).
- Installation is critical and requires experienced contractors. The contractor should install the matting material in such a manner that continuous contact between the material and the soil occurs.
- Geotextiles and Mats may delay seed germination, due to reduction in soil temperature.
- Blankets and mats are generally not suitable for excessively rocky sites or areas where the final vegetation will be mowed (since staples and netting can catch in mowers).
- Blankets and mats must be removed and disposed of prior to application of permanent soil stabilization measures.
- Plastic sheeting is easily vandalized, easily torn, photodegradable, and must be disposed of at a landfill.
- Plastic results in 100% runoff, which may cause serious erosion problems in the areas receiving the increased flow.
- The use of plastic should be limited to covering stockpiles or very small graded areas for short periods of time (such as through one imminent storm event) until alternative measures, such as seeding and mulching, may be installed.
- Geotextiles, mats, plastic covers, and erosion control covers have maximum flow rate limitations; consult the manufacturer for proper selection.
- Not suitable for areas that have heavy foot traffic (tripping hazard) – e.g., pad areas around buildings under construction.

Implementation

Material Selection

Organic matting materials have been found to be effective where re-vegetation will be provided by re-seeding. The choice of matting should be based on the size of area, side slopes, surface conditions such as hardness, moisture, weed growth, and availability of materials.

The following natural and synthetic mattings are commonly used:

Geotextiles

- Material should be a woven polypropylene fabric with minimum thickness of 0.06 in., minimum width of 12 ft and should have minimum tensile strength of 150 lbs (warp), 80 lbs (fill) in conformance with the requirements in ASTM Designation: D 4632. The permittivity of the fabric should be approximately 0.07 sec^{-1} in conformance with the requirements in ASTM Designation: D4491. The fabric should have an ultraviolet (UV) stability of 70 percent in conformance with the requirements in ASTM designation: D4355. Geotextile blankets must be secured in place with wire staples or sandbags and by keying into tops of slopes to prevent infiltration of surface waters under geotextile. Staples should be made of minimum 11 gauge steel wire and should be U-shaped with 8 in. legs and 2 in. crown.
- Geotextiles may be reused if they are suitable for the use intended.

Plastic Covers

- Plastic sheeting should have a minimum thickness of 6 mils, and must be keyed in at the top of slope and firmly held in place with sandbags or other weights placed no more than 10 ft apart. Seams are typically taped or weighted down their entire length, and there should be at least a 12 in. to 24 in. overlap of all seams. Edges should be embedded a minimum of 6 in. in soil.
- All sheeting must be inspected periodically after installation and after significant rainstorms to check for erosion, undermining, and anchorage failure. Any failures must be repaired immediately. If washout or breakages occur, the material should be re-installed after repairing the damage to the slope.

Erosion Control Blankets/Mats

- Biodegradable rolled erosion control products (RECPs) are typically composed of jute fibers, curled wood fibers, straw, coconut fiber, or a combination of these materials. In order for an RECP to be considered 100% biodegradable, the netting, sewing or adhesive system that holds the biodegradable mulch fibers together must also be biodegradable.

  - **Jute** is a natural fiber that is made into a yarn that is loosely woven into a biodegradable mesh. It is designed to be used in conjunction with vegetation and has longevity of approximately one year. The material is supplied in rolled strips, which should be secured to the soil with U-shaped staples or stakes in accordance with manufacturers' recommendations.

  - **Excelsior** (curled wood fiber) blanket material should consist of machine produced mats of curled wood excelsior with 80 percent of the fiber 6 in. or longer. The excelsior blanket should be of consistent thickness. The wood fiber must be evenly distributed over the entire area of the blanket. The top surface of the blanket should be covered with a photodegradable extruded plastic mesh. The blanket should be smolder resistant without the use of chemical additives and should be non-toxic and non-injurious to plant and animal life. Excelsior blankets should be furnished in rolled strips, a minimum of 48 in. wide, and should have an average weight of 0.8 lb/yd^2, ±10 percent, at the time of manufacture. Excelsior blankets must be secured in place with wire staples. Staples should be made of minimum 11 gauge steel wire and should be U-shaped with 8 in. legs and 2 in. crown.

- **Straw blanket** should be machine produced mats of straw with a lightweight biodegradable netting top layer. The straw should be attached to the netting with biodegradable thread or glue strips. The straw blanket should be of consistent thickness. The straw should be evenly distributed over the entire area of the blanket. Straw blanket should be furnished in rolled strips a minimum of 6.5 ft wide, a minimum of 80 ft long and a minimum of 0.5 lb/yd^2. Straw blankets must be secured in place with wire staples. Staples should be made of minimum 11 gauge steel wire and should be U-shaped with 8 in. legs and 2 in. crown.

- **Wood fiber blanket** is composed of biodegradable fiber mulch with extruded plastic netting held together with adhesives. The material is designed to enhance re-vegetation. The material is furnished in rolled strips, which must be secured to the ground with U-shaped staples or stakes in accordance with manufacturers' recommendations.

- **Coconut fiber blanket** should be a machine produced mat of 100 percent coconut fiber with biodegradable netting on the top and bottom. The coconut fiber should be attached to the netting with biodegradable thread or glue strips. The coconut fiber blanket should be of consistent thickness. The coconut fiber should be evenly distributed over the entire area of the blanket. Coconut fiber blanket should be furnished in rolled strips with a minimum of 6.5 ft wide, a minimum of 80 ft. long and a minimum of 0.5 lb/yd^2. Coconut fiber blankets must be secured in place with wire staples. Staples should be made of minimum 11 gauge steel wire and should be U-shaped with 8 in. legs and 2 in. crown.

- **Coconut fiber mesh** is a thin permeable membrane made from coconut or corn fiber that is spun into a yarn and woven into a biodegradable mat. It is designed to be used in conjunction with vegetation and typically has longevity of several years. The material is supplied in rolled strips, which must be secured to the soil with U-shaped staples or stakes in accordance with manufacturers' recommendations.

- **Straw coconut fiber blanket** should be machine produced mats of 70 percent straw and 30 percent coconut fiber with a biodegradable netting top layer and a biodegradable bottom net. The straw and coconut fiber should be attached to the netting with biodegradable thread or glue strips. The straw coconut fiber blanket should be of consistent thickness. The straw and coconut fiber should be evenly distributed over the entire area of the blanket. Straw coconut fiber blanket should be furnished in rolled strips a minimum of 6.5 ft wide, a minimum of 80 ft long and a minimum of 0.5 lb/yd^2. Straw coconut fiber blankets must be secured in place with wire staples. Staples should be made of minimum 11 gauge steel wire and should be U-shaped with 8 in. legs and 2 in. crown.

- Non-biodegradable RECPs are typically composed of polypropylene, polyethylene, nylon or other synthetic fibers. In some cases, a combination of biodegradable and synthetic fibers is used to construct the RECP. Netting used to hold these fibers together is typically non-biodegradable as well.

- **Plastic netting** is a lightweight biaxially oriented netting designed for securing loose mulches like straw or paper to soil surfaces to establish vegetation. The netting is photodegradable. The netting is supplied in rolled strips, which must be secured with U-shaped staples or stakes in accordance with manufacturers' recommendations.
- **Plastic mesh** is an open weave geotextile that is composed of an extruded synthetic fiber woven into a mesh with an opening size of less than ¼ in. It is used with re-vegetation or may be used to secure loose fiber such as straw to the ground. The material is supplied in rolled strips, which must be secured to the soil with U-shaped staples or stakes in accordance with manufacturers' recommendations.
- **Synthetic fiber with netting** is a mat that is composed of durable synthetic fibers treated to resist chemicals and ultraviolet light. The mat is a dense, three dimensional mesh of synthetic (typically polyolefin) fibers stitched between two polypropylene nets. The mats are designed to be re-vegetated and provide a permanent composite system of soil, roots, and geomatrix. The material is furnished in rolled strips, which must be secured with U-shaped staples or stakes in accordance with manufacturers' recommendations.
- **Bonded synthetic fibers** consist of a three dimensional geomatrix nylon (or other synthetic) matting. Typically it has more than 90 percent open area, which facilitates root growth. It's tough root reinforcing system anchors vegetation and protects against hydraulic lift and shear forces created by high volume discharges. It can be installed over prepared soil, followed by seeding into the mat. Once vegetated, it becomes an invisible composite system of soil, roots, and geomatrix. The material is furnished in rolled strips that must be secured with U-shaped staples or stakes in accordance with manufacturers' recommendations.
- **Combination synthetic and biodegradable RECPs** consist of biodegradable fibers, such as wood fiber or coconut fiber, with a heavy polypropylene net stitched to the top and a high strength continuous filament geomatrix or net stitched to the bottom. The material is designed to enhance re-vegetation. The material is furnished in rolled strips, which must be secured with U-shaped staples or stakes in accordance with manufacturers' recommendations.

Site Preparation

- Proper site preparation is essential to ensure complete contact of the blanket or matting with the soil.
- Grade and shape the area of installation.
- Remove all rocks, clods, vegetation or other obstructions so that the installed blankets or mats will have complete, direct contact with the soil.
- Prepare seedbed by loosening 2 to 3 in. of topsoil.

Seeding

Seed the area before blanket installation for erosion control and revegetation. Seeding after mat installation is often specified for turf reinforcement application. When seeding prior to blanket installation, all check slots and other areas disturbed during installation must be re-seeded. Where soil filling is specified, seed the matting and the entire disturbed area after installation and prior to filling the mat with soil.

Fertilize and seed in accordance with seeding specifications or other types of landscaping plans. When using jute matting on a seeded area, apply approximately half the seed before laying the mat and the remainder after laying the mat. The protective matting can be laid over areas where grass has been planted and the seedlings have emerged. Where vines or other ground covers are to be planted, lay the protective matting first and then plant through matting according to design of planting.

Check Slots

Check slots are made of glass fiber strips, excelsior matting strips or tight folded jute matting blanket or strips for use on steep, highly erodible watercourses. The check slots are placed in narrow trenches 6 to 12 in. deep across the channel and left flush with the soil surface. They are to cover the full cross section of designed flow.

Laying and Securing Matting

- Before laying the matting, all check slots should be installed and the friable seedbed made free from clods, rocks, and roots. The surface should be compacted and finished according to the requirements of the manufacturer's recommendations.

- Mechanical or manual lay down equipment should be capable of handling full rolls of fabric and laying the fabric smoothly without wrinkles or folds. The equipment should meet the fabric manufacturer's recommendations or equivalent standards.

Anchoring

- U-shaped wire staples, metal geotextile stake pins, or triangular wooden stakes can be used to anchor mats and blankets to the ground surface.

- Wire staples should be made of minimum 11 gauge steel wire and should be U-shaped with 8 in. legs and 2 in. crown.

- Metal stake pins should be 0.188 in. diameter steel with a 1.5 in. steel washer at the head of the pin, and 8 in. in length.

- Wire staples and metal stakes should be driven flush to the soil surface.

Installation on Slopes

Installation should be in accordance with the manufacturer's recommendations. In general, these will be as follows:

- Begin at the top of the slope and anchor the blanket in a 6 in. deep by 6 in. wide trench. Backfill trench and tamp earth firmly.

- Unroll blanket down slope in the direction of water flow.

- Overlap the edges of adjacent parallel rolls 2 to 3 in. and staple every 3 ft.

- When blankets must be spliced, place blankets end over end (shingle style) with 6 in. overlap. Staple through overlapped area, approximately 12 in. apart.
- Lay blankets loosely and maintain direct contact with the soil. Do not stretch.
- Staple blankets sufficiently to anchor blanket and maintain contact with the soil. Staples should be placed down the center and staggered with the staples placed along the edges. Steep slopes, 1:1 (H:V) to 2:1 (H:V), require a minimum of 2 staples/yd^2. Moderate slopes, 2:1 (H:V) to 3:1 (H:V), require a minimum of 1 ½ staples/yd^2.

Installation in Channels

Installation should be in accordance with the manufacturer's recommendations. In general, these will be as follows:

- Dig initial anchor trench 12 in. deep and 6 in. wide across the channel at the lower end of the project area.
- Excavate intermittent check slots, 6 in. deep and 6 in. wide across the channel at 25 to 30 ft intervals along the channels.
- Cut longitudinal channel anchor trenches 4 in. deep and 4 in. wide along each side of the installation to bury edges of matting, whenever possible extend matting 2 to 3 in. above the crest of the channel side slopes.
- Beginning at the downstream end and in the center of the channel, place the initial end of the first roll in the anchor trench and secure with fastening devices at 12 in. intervals. Note: matting will initially be upside down in anchor trench.
- In the same manner, position adjacent rolls in anchor trench, overlapping the preceding roll a minimum of 3 in.
- Secure these initial ends of mats with anchors at 12 in. intervals, backfill and compact soil.
- Unroll center strip of matting upstream. Stop at next check slot or terminal anchor trench. Unroll adjacent mats upstream in similar fashion, maintaining a 3 in. overlap.
- Fold and secure all rolls of matting snugly into all transverse check slots. Lay mat in the bottom of the slot then fold back against itself. Anchor through both layers of mat at 12 in. intervals, then backfill and compact soil. Continue rolling all mat widths upstream to the next check slot or terminal anchor trench.
- Alternate method for non-critical installations: Place two rows of anchors on 6 in. centers at 25 to 30 ft. intervals in lieu of excavated check slots.
- Staple shingled lap spliced ends a minimum of 12 in. apart on 12 in. intervals.
- Place edges of outside mats in previously excavated longitudinal slots; anchor using prescribed staple pattern, backfill, and compact soil.
- Anchor, fill, and compact upstream end of mat in a 12 in. by 6 in. terminal trench.

- Secure mat to ground surface using U-shaped wire staples, geotextile pins, or wooden stakes.
- Seed and fill turf reinforcement matting with soil, if specified.

Soil Filling (if specified for turf reinforcement)

- Always consult the manufacturer's recommendations for installation.
- Do not drive tracked or heavy equipment over mat.
- Avoid any traffic over matting if loose or wet soil conditions exist.
- Use shovels, rakes, or brooms for fine grading and touch up.
- Smooth out soil filling just exposing top netting of mat.

Temporary Soil Stabilization Removal

- Temporary soil stabilization removed from the site of the work must be disposed of if necessary.

Costs

Relatively high compared to other BMPs. Biodegradable materials: \$0.50 - \$0.57/yd^2. Permanent materials: \$3.00 - \$4.50/yd^2. Staples: \$0.04 - \$0.05/staple. Approximate costs for installed materials are shown below:

Rolled Erosion Control Products		Installed Cost per Acre
Biodegradable	Jute Mesh	$6,500
	Curled Wood Fiber	$10,500
	Straw	$8,900
	Wood Fiber	$8,900
	Coconut Fiber	$13,000
	Coconut Fiber Mesh	$31,200
	Straw Coconut Fiber	$10,900
Non-Biodegradable	Plastic Netting	$2,000
	Plastic Mesh	$3,200
	Synthetic Fiber with Netting	$34,800
	Bonded Synthetic Fibers	$50,000
	Combination with Biodegradable	$32,000

Source: Caltrans Guidance for Soil Stabilization for Temporary Slopes, Nov. 1999

Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season, and at two-week intervals during the non-rainy season.
- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges occur.

- Areas where erosion is evident shall be repaired and BMPs reapplied as soon as possible. Care should be exercised to minimize the damage to protected areas while making repairs, as any area damaged will require reapplication of BMPs.
- If washout or breakage occurs, re-install the material after repairing the damage to the slope or channel.
- Make sure matting is uniformly in contact with the soil.
- Check that all the lap joints are secure.
- Check that staples are flush with the ground.
- Check that disturbed areas are seeded.

References

Guides for Erosion and Sediment Controls in California, USDA Soils Conservation Service, January 1991.

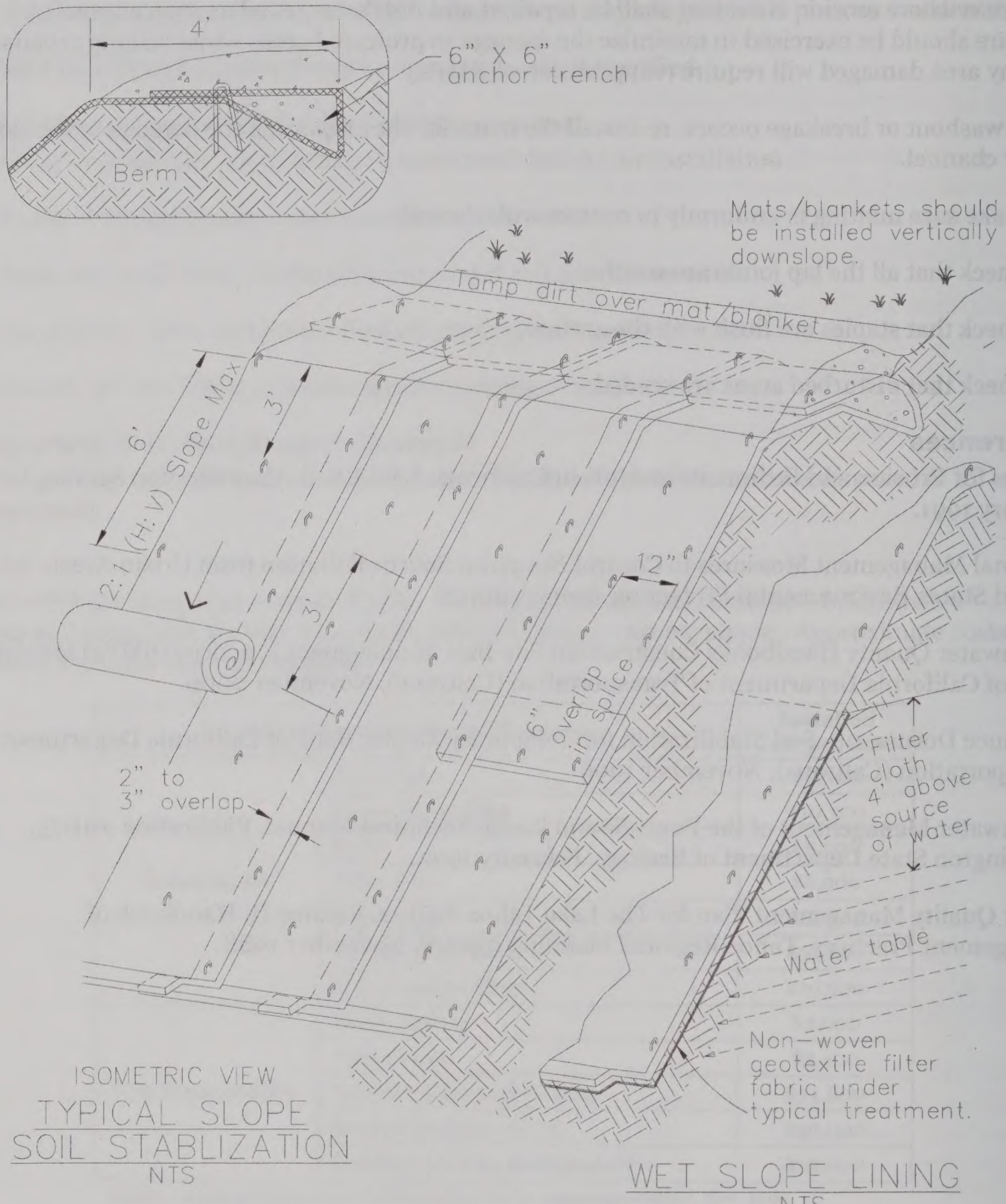
National Management Measures to Control Nonpoint Source Pollution from Urban Areas, United States Environmental Protection Agency, 2002.

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Guidance Document: Soil Stabilization for Temporary Slopes, State of California Department of Transportation (Caltrans), November 1999

Stormwater Management of the Puget Sound Basin, Technical Manual, Publication #91-75, Washington State Department of Ecology, February 1992.

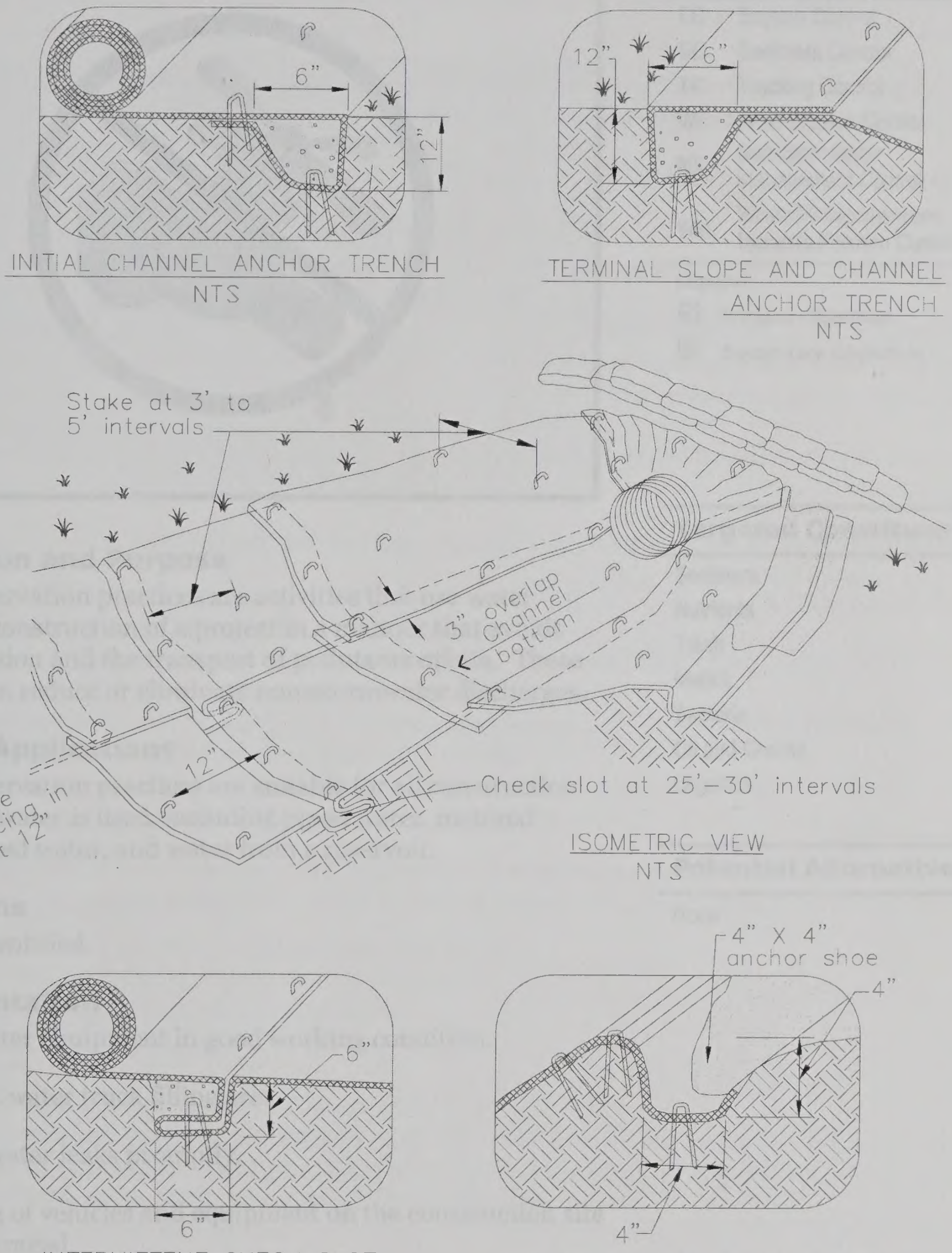
Water Quality Management Plan for The Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.


4'
6" X 6"
anchor trench
Berm
Mats/blankets should be installed vertically downslope.
Tamp dirt over mat/blanket
6' (H:V) Slope Max
2:1
3'
3'
12"
6" overlap in splice
2" to 3" overlap
Filter cloth 4' above source of water
Water table
Non-woven geotextile filter fabric under typical treatment.
ISOMETRIC VIEW
TYPICAL SLOPE SOIL STABLIZATION
NTS
WET SLOPE LINING
NTS

NOTES:

1. Slope surface shall be free of rocks, clods, sticks and grass. Mats/blankets shall have good soil contact.
2. Lay blankets loosely and stake or staple to maintain direct contact with the soil. Do not stretch.
3. Install per manufacturer's recommendations

TYPICAL INSTALLATION DETAIL


6"
12"
12"
6"
Stake at 3' to 5' intervals
3" overlap Channel bottom
12"
Staple spacing in slot 12"
Check slot at 25'–30' intervals
4" X 4" anchor shoe
4"
6"
6"
4"

INITIAL CHANNEL ANCHOR TRENCH
NTS

TERMINAL SLOPE AND CHANNEL ANCHOR TRENCH
NTS

ISOMETRIC VIEW
NTS

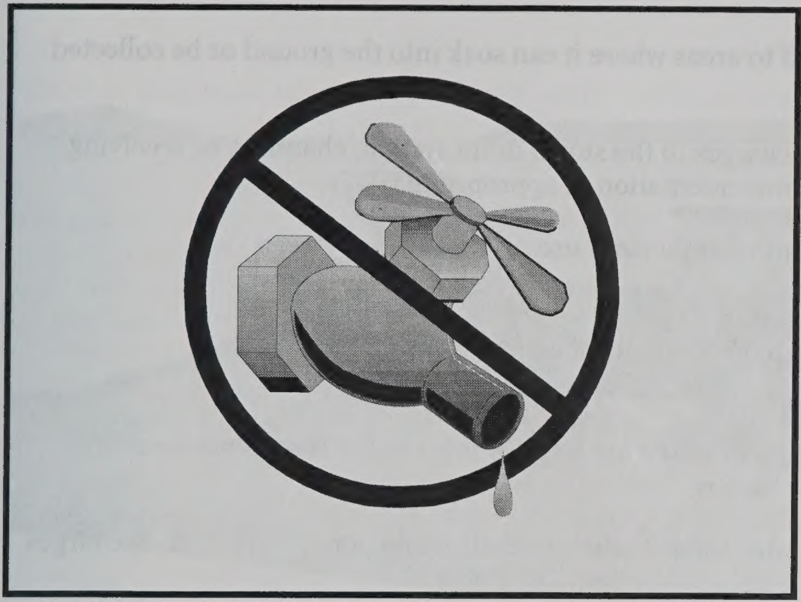
INTERMITTENT CHECK SLOT
NTS

LONGITUDINAL ANCHOR TRENCH
NTS

NOTES:
1. Check slots to be constructed per manufacturers specifications.
2. Staking or stapling layout per manufacturers specifications.
3. Install per manufacturer's recommendations

TYPICAL INSTALLATION DETAIL

Water Conservation Practices NS-1



Objectives

EC	Erosion Control	☒
SE	Sediment Control	☒
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	

Legend:

☑ Primary Objective

☒ Secondary Objective

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

Water conservation practices are activities that use water during the construction of a project in a manner that avoids causing erosion and the transport of pollutants offsite. These practices can reduce or eliminate non-stormwater discharges.

Suitable Applications

Water conservation practices are suitable for all construction sites where water is used, including piped water, metered water, trucked water, and water from a reservoir.

Limitations

- None identified.

Implementation

- Keep water equipment in good working condition.
- Stabilize water truck filling area.
- Repair water leaks promptly.
- Washing of vehicles and equipment on the construction site is discouraged.
- Avoid using water to clean construction areas. If water must be used for cleaning or surface preparation, surface should be swept and vacuumed first to remove dirt. This will minimize amount of water required.

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- Direct construction water runoff to areas where it can soak into the ground or be collected and reused.

- Authorized non-stormwater discharges to the storm drain system, channels, or receiving waters are acceptable with the implementation of appropriate BMPs.

- Lock water tank valves to prevent unauthorized use.

Costs

The cost is small to none compared to the benefits of conserving water.

Inspection and Maintenance

- Inspect and verify that activity based BMPs are in place prior to the commencement of authorized non-stormwater discharges.

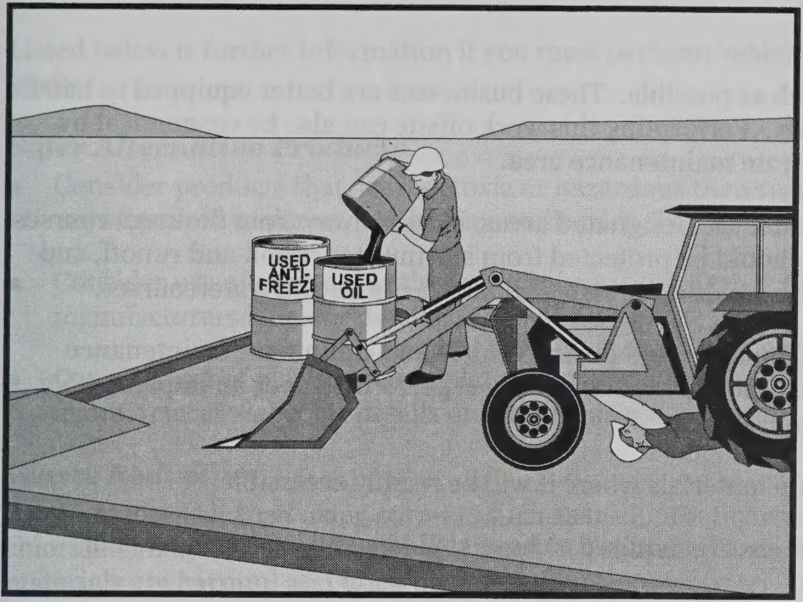
- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges are occuring.

- Repair water equipment as needed to prevent unintended discharges.
  - Water trucks
  - Water reservoirs (water buffalos)
  - Irrigation systems
  - Hydrant connections

References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Vehicle & Equipment Maintenance NS-10



Description and Purpose

Prevent or reduce the contamination of stormwater resulting from vehicle and equipment maintenance by running a "dry and clean site". The best option would be to perform maintenance activities at an offsite facility. If this option is not available then work should be performed in designated areas only, while providing cover for materials stored outside, checking for leaks and spills, and containing and cleaning up spills immediately. Employees and subcontractors must be trained in proper procedures.

Suitable Applications

These procedures are suitable on all construction projects where an onsite yard area is necessary for storage and maintenance of heavy equipment and vehicles.

Limitations

Onsite vehicle and equipment maintenance should only be used where it is impractical to send vehicles and equipment offsite for maintenance and repair. Sending vehicles/equipment offsite should be done in conjunction with TR-1, Stabilized Construction Entrance/Exit.

Outdoor vehicle or equipment maintenance is a potentially significant source of stormwater pollution. Activities that can contaminate stormwater include engine repair and service, changing or replacement of fluids, and outdoor equipment storage and parking (engine fluid leaks). For further information on vehicle or equipment servicing, see NS-8, Vehicle and Equipment Cleaning, and NS-9, Vehicle and Equipment Fueling.

Objectives

EC	Erosion Control	
SE	Sediment Control	
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	
Nutrients	☑
Trash	☑
Metals	
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

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NS-10 Vehicle & Equipment Maintenance

Implementation

- Use offsite repair shops as much as possible. These businesses are better equipped to handle vehicle fluids and spills properly. Performing this work offsite can also be economical by eliminating the need for a separate maintenance area.
- If maintenance must occur onsite, use designated areas, located away from drainage courses. Dedicated maintenance areas should be protected from stormwater runon and runoff, and should be located at least 50 ft from downstream drainage facilities and watercourses.
- Drip pans or absorbent pads should be used during vehicle and equipment maintenance work that involves fluids, unless the maintenance work is performed over an impermeable surface in a dedicated maintenance area.
- Place a stockpile of spill cleanup materials where it will be readily accessible.
- All fueling trucks and fueling areas are required to have spill kits and/or use other spill protection devices.
- Use adsorbent materials on small spills. Remove the absorbent materials promptly and dispose of properly.
- Inspect onsite vehicles and equipment daily at startup for leaks, and repair immediately.
- Keep vehicles and equipment clean; do not allow excessive build-up of oil and grease.
- Segregate and recycle wastes, such as greases, used oil or oil filters, antifreeze, cleaning solutions, automotive batteries, hydraulic and transmission fluids. Provide secondary containment and covers for these materials if stored onsite.
- Train employees and subcontractors in proper maintenance and spill cleanup procedures.
- Drip pans or plastic sheeting should be placed under all vehicles and equipment placed on docks, barges, or other structures over water bodies when the vehicle or equipment is planned to be idle for more than 1 hour.
- For long-term projects, consider using portable tents or covers over maintenance areas if maintenance cannot be performed offsite.
- Consider use of new, alternative greases and lubricants, such as adhesive greases, for chassis lubrication and fifth-wheel lubrication.
- Properly dispose of used oils, fluids, lubricants, and spill cleanup materials.
- Do not place used oil in a dumpster or pour into a storm drain or watercourse.
- Properly dispose of or recycle used batteries.
- Do not bury used tires.
- Repair leaks of fluids and oil immediately.

Listed below is further information if you must perform vehicle or equipment maintenance onsite.

Safer Alternative Products

- Consider products that are less toxic or hazardous than regular products. These products are often sold under an "environmentally friendly" label.
- Consider use of grease substitutes for lubrication of truck fifth-wheels. Follow manufacturers label for details on specific uses.
- Consider use of plastic friction plates on truck fifth-wheels in lieu of grease. Follow manufacturers label for details on specific uses.

Waste Reduction

Parts are often cleaned using solvents such as trichloroethylene, trichloroethane, or methylene chloride. Many of these cleaners are listed in California Toxic Rule as priority pollutants. These materials are harmful and must not contaminate stormwater. They must be disposed of as a hazardous waste. Reducing the number of solvents makes recycling easier and reduces hazardous waste management costs. Often, one solvent can perform a job as well as two different solvents. Also, if possible, eliminate or reduce the amount of hazardous materials and waste by substituting non-hazardous or less hazardous materials. For example, replace chlorinated organic solvents with non-chlorinated solvents. Non-chlorinated solvents like kerosene or mineral spirits are less toxic and less expensive to dispose of properly. Check the list of active ingredients to see whether it contains chlorinated solvents. The "chlor" term indicates that the solvent is chlorinated. Also, try substituting a wire brush for solvents to clean parts.

Recycling and Disposal

Separating wastes allows for easier recycling and may reduce disposal costs. Keep hazardous wastes separate, do not mix used oil solvents, and keep chlorinated solvents (like,- trichloroethane) separate from non-chlorinated solvents (like kerosene and mineral spirits). Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around. Provide cover and secondary containment until these materials can be removed from the site.

Oil filters can be recycled. Ask your oil supplier or recycler about recycling oil filters.

Do not dispose of extra paints and coatings by dumping liquid onto the ground or throwing it into dumpsters. Allow coatings to dry or harden before disposal into covered dumpsters.

Store cracked batteries in a non-leaking secondary container. Do this with all cracked batteries, even if you think all the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are sure it is not leaking.

Costs

All of the above are low cost measures. Higher costs are incurred to setup and maintain onsite maintenance areas.

NS-10 Vehicle & Equipment Maintenance

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and at two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges occur.
- Keep ample supplies of spill cleanup materials onsite.
- Maintain waste fluid containers in leak proof condition.
- Vehicles and equipment should be inspected on each day of use. Leaks should be repaired immediately or the problem vehicle(s) or equipment should be removed from the project site.
- Inspect equipment for damaged hoses and leaky gaskets routinely. Repair or replace as needed.

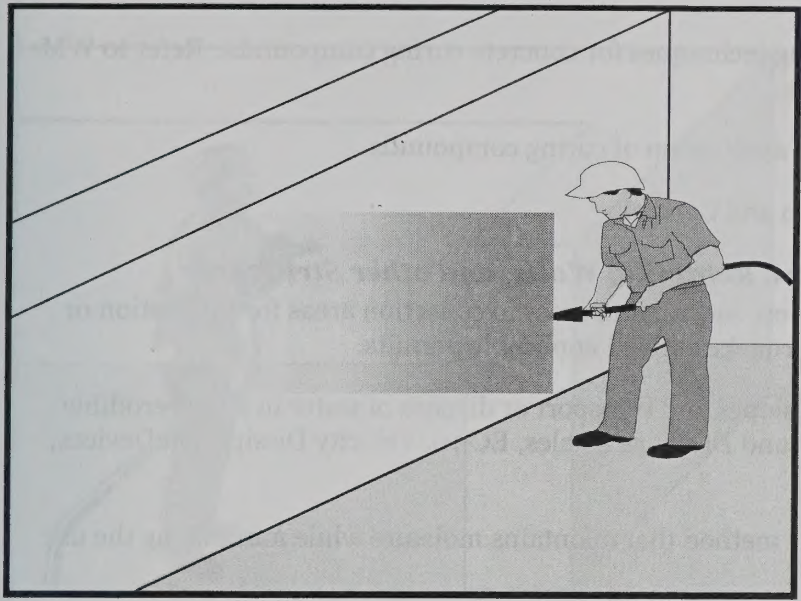
References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Coastal Nonpoint Pollution Control Program; Program Development and Approval Guidance, Working Group, Working Paper; USEPA, April 1992.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Concrete Curing NS-12



Objectives

EC	Erosion Control	
SE	Sediment Control	
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	

Potential Alternatives

None

Description and Purpose

Concrete curing is used in the construction of structures such as bridges, retaining walls, pump houses, large slabs, and structured foundations. Concrete curing includes the use of both chemical and water methods. Discharges of stormwater and non-stormwater exposed to concrete during curing may have a high pH and may contain chemicals, metals, and fines. Proper procedures reduce or eliminate the contamination of stormwater runoff during concrete curing.

Suitable Applications

Suitable applications include all projects where Portland Cement Concrete (PCC) and concrete curing chemicals are placed where they can be exposed to rainfall, runoff from other areas, or where runoff from the PCC will leave the site.

Limitations

None identified.

Implementation

Chemical Curing

- Avoid over spray of curing compounds.
- Minimize the drift of chemical cure as much as possible by applying the curing compound close to the concrete surface. Apply an amount of compound that covers the surface, but does not allow any runoff of the compound.

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- Use proper storage and handling techniques for concrete curing compounds. Refer to WM-1, Material Delivery and Storage.
- Protect drain inlets prior to the application of curing compounds.
- Refer to WM-4, Spill Prevention and Control.

Water Curing for Bridge Decks, Retaining Walls, and other Structures

- Direct cure water away from inlets and watercourses to collection areas for infiltration or other means of removal in accordance with all applicable permits.
- Collect cure water at the top of slopes and transport or dispose of water in a non-erodible manner. See EC-9 Earth Dikes and Drainage Swales, EC-10, Velocity Dissipation Devices, and EC-11, Slope Drains.
- Utilize wet blankets or a similar method that maintains moisture while minimizing the use and possible discharge of water.

Costs

All of the above measures are generally low cost.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and at two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges occur.
- Ensure that employees and subcontractors implement appropriate measures for storage, handling, and use of curing compounds.
- Inspect cure containers and spraying equipment for leaks.

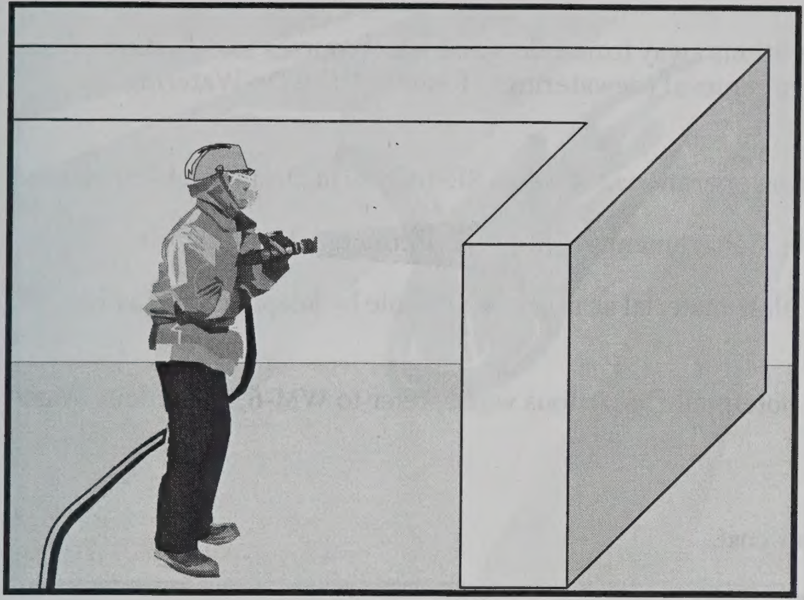
References

Blue Print for a Clean Bay-Construction-Related Industries: Best Management Practices for Stormwater Pollution Prevention; Santa Clara Valley Non Point Source Pollution Control Program, 1992.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.

Concrete Finishing NS-13



Objectives

EC	Erosion Control	
SE	Sediment Control	
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	☑
Bacteria	
Oil and Grease	
Organics	☑

Potential Alternatives

None

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Description and Purpose

Concrete finishing methods are used for bridge deck rehabilitation, paint removal, curing compound removal, and final surface finish appearances. Methods include sand blasting, shot blasting, grinding, or high pressure water blasting. Stormwater and non-stormwater exposed to concrete finishing by-products may have a high pH and may contain chemicals, metals, and fines. Proper procedures and implementation of appropriate BMPs can minimize the impact that concrete-finishing methods may have on stormwater and non-stormwater discharges.

Suitable Applications

These procedures apply to all construction locations where concrete finishing operations are performed.

Limitations

None identified.

Implementation

- Collect and properly dispose of water from high-pressure water blasting operations.
- Collect contaminated water from blasting operations at the top of slopes. Transport or dispose of contaminated water while using BMPs such as those for erosion control. Refer to EC-9, Earth Dikes and Drainage Swales, EC-10, Velocity Dissipation Devices, and EC-11, Slope Drains.

- Direct water from blasting operations away from inlets and watercourses to collection areas for infiltration or other means of removal (dewatering). Refer to NS-2 De-Watering Operations.
- Protect inlets during sandblasting operations. Refer to SE-10, Storm Drain Inlet Protection.
- Refer to WM-8, Concrete Waste Management for disposal of concrete based debris.
- Minimize the drift of dust and blast material as much as possible by keeping the blasting nozzle close to the surface.
- When blast residue contains a potentially hazardous waste, refer to WM-6, Hazardous Waste Management.

Costs

These measures are generally of low cost.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and at two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges occur.
- Sweep or vacuum up debris from sandblasting at the end of each shift.
- At the end of each work shift, remove and contain liquid and solid waste from containment structures, if any, and from the general work area.

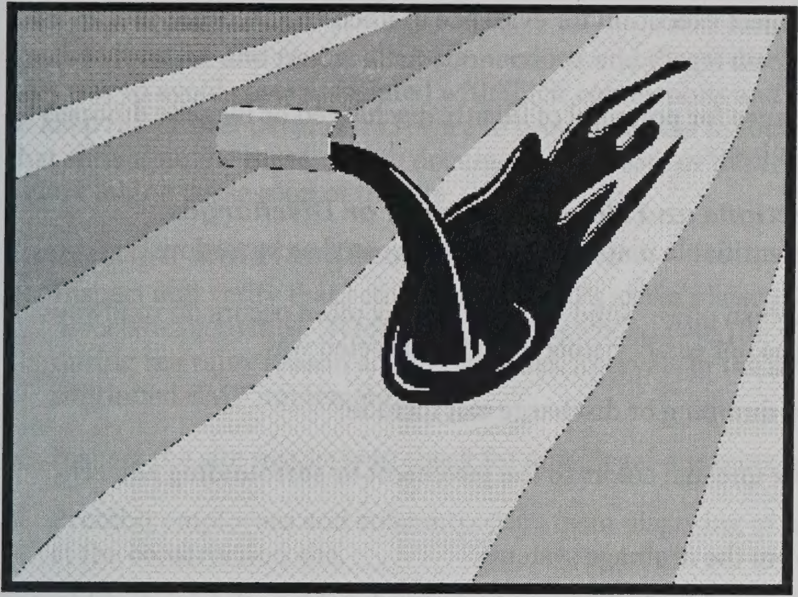
References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.

Illicit Connection/Discharge NS-6



Objectives

EC	Erosion Control	
SE	Sediment Control	
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	☑
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Procedures and practices designed for construction contractors to recognize illicit connections or illegally dumped or discharged materials on a construction site and report incidents.

Suitable Applications

This best management practice (BMP) applies to all construction projects. Illicit connection/discharge and reporting is applicable anytime an illicit connection or discharge is discovered or illegally dumped material is found on the construction site.

Limitations

Illicit connections and illegal discharges or dumping, for the purposes of this BMP, refer to discharges and dumping caused by parties other than the contractor. If pre-existing hazardous materials or wastes are known to exist onsite, they should be identified in the SWPPP and handled as set forth in the SWPPP.

Implementation

Planning

- Review the SWPPP. Pre-existing areas of contamination should be identified and documented in the SWPPP.
- Inspect site before beginning the job for evidence of illicit connections, illegal dumping or discharges. Document any pre-existing conditions and notify the owner.

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- Inspect site regularly during project execution for evidence of illicit connections, illegal dumping or discharges.
- Observe site perimeter for evidence for potential of illicitly discharged or illegally dumped material, which may enter the job site.

Identification of Illicit Connections and Illegal Dumping or Discharges

- **General** – unlabeled and unidentifiable material should be treated as hazardous.
- **Solids** - Look for debris, or rubbish piles. Solid waste dumping often occurs on roadways with light traffic loads or in areas not easily visible from the traveled way.
- **Liquids** - signs of illegal liquid dumping or discharge can include:
    - Visible signs of staining or unusual colors to the pavement or surrounding adjacent soils
    - Pungent odors coming from the drainage systems
    - Discoloration or oily substances in the water or stains and residues detained within ditches, channels or drain boxes
    - Abnormal water flow during the dry weather season
- **Urban Areas** - Evidence of illicit connections or illegal discharges is typically detected at storm drain outfall locations or at manholes. Signs of an illicit connection or illegal discharge can include:
    - Abnormal water flow during the dry weather season
    - Unusual flows in sub drain systems used for dewatering
    - Pungent odors coming from the drainage systems
    - Discoloration or oily substances in the water or stains and residues detained within ditches, channels or drain boxes
    - Excessive sediment deposits, particularly adjacent to or near active offsite construction projects
- **Rural Areas** - Illicit connections or illegal discharges involving irrigation drainage ditches are detected by visual inspections. Signs of an illicit discharge can include:
    - Abnormal water flow during the non-irrigation season
    - Non-standard junction structures
    - Broken concrete or other disturbances at or near junction structures

Reporting

Notify the owner of any illicit connections and illegal dumping or discharge incidents at the time of discovery. For illicit connections or discharges to the storm drain system, notify the local stormwater management agency. For illegal dumping, notify the local law enforcement agency.

Cleanup and Removal

The responsibility for cleanup and removal of illicit or illegal dumping or discharges will vary by location. Contact the local stormwater management agency for further information.

Costs

Costs to look for and report illicit connections and illegal discharges and dumping are low. The best way to avoid costs associated with illicit connections and illegal discharges and dumping is to keep the project perimeters secure to prevent access to the site, to observe the site for vehicles that should not be there, and to document any waste or hazardous materials that exist onsite before taking possession of the site.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and at two-week intervals in the non-rainy season to verify continued BMP implementation.

- Inspect the site regularly to check for any illegal dumping or discharge.

- Prohibit employees and subcontractors from disposing of non-job related debris or materials at the construction site.

- Notify the owner of any illicit connections and illegal dumping or discharge incidents at the time of discovery.

References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

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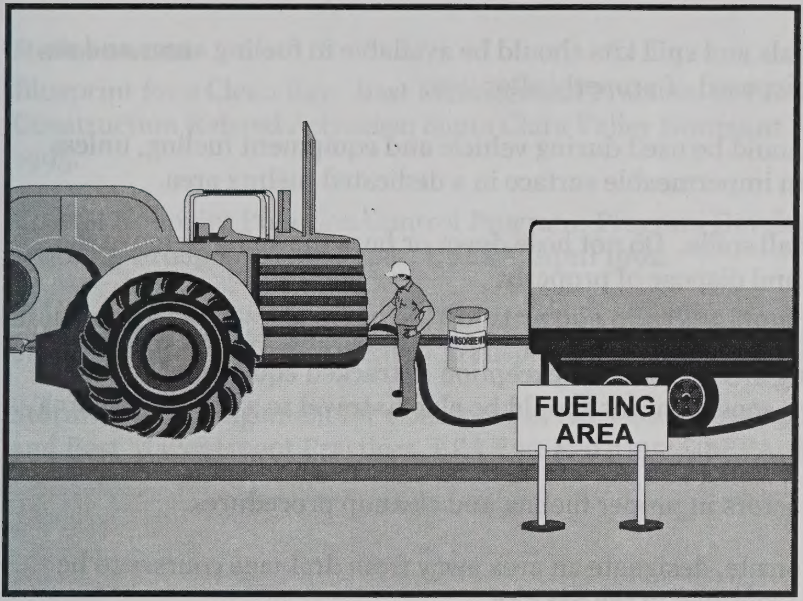
Vehicle and Equipment Fueling NS-9



Objectives

EC	Erosion Control	
SE	Sediment Control	
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	☑
Organics	

Potential Alternatives

None

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Description and Purpose

Vehicle equipment fueling procedures and practices are designed to prevent fuel spills and leaks, and reduce or eliminate contamination of stormwater. This can be accomplished by using offsite facilities, fueling in designated areas only, enclosing or covering stored fuel, implementing spill controls, and training employees and subcontractors in proper fueling procedures.

Suitable Applications

These procedures are suitable on all construction sites where vehicle and equipment fueling takes place.

Limitations

Onsite vehicle and equipment fueling should only be used where it is impractical to send vehicles and equipment offsite for fueling. Sending vehicles and equipment offsite should be done in conjunction with TR-1, Stabilized Construction Entrance/ Exit.

Implementation

- Use offsite fueling stations as much as possible. These businesses are better equipped to handle fuel and spills properly. Performing this work offsite can also be economical by eliminating the need for a separate fueling area at a site.
- Discourage "topping-off" of fuel tanks.

- Absorbent spill cleanup materials and spill kits should be available in fueling areas and on fueling trucks, and should be disposed of properly after use.

- Drip pans or absorbent pads should be used during vehicle and equipment fueling, unless the fueling is performed over an impermeable surface in a dedicated fueling area.

- Use absorbent materials on small spills. Do not hose down or bury the spill. Remove the adsorbent materials promptly and dispose of properly.

- Avoid mobile fueling of mobile construction equipment around the site; rather, transport the equipment to designated fueling areas. With the exception of tracked equipment such as bulldozers and large excavators, most vehicles should be able to travel to a designated area with little lost time.

- Train employees and subcontractors in proper fueling and cleanup procedures.

- When fueling must take place onsite, designate an area away from drainage courses to be used. Fueling areas should be identified in the SWPPP.

- Dedicated fueling areas should be protected from stormwater runon and runoff, and should be located at least 50 ft away from downstream drainage facilities and watercourses. Fueling must be performed on level-grade areas.

- Protect fueling areas with berms and dikes to prevent runon, runoff, and to contain spills.

- Nozzles used in vehicle and equipment fueling should be equipped with an automatic shutoff to control drips. Fueling operations should not be left unattended.

- Use vapor recovery nozzles to help control drips as well as air pollution where required by Air Quality Management Districts (AQMD).

- Federal, state, and local requirements should be observed for any stationary above ground storage tanks.

Costs

- All of the above measures are low cost except for the capital costs of above ground tanks that meet all local environmental, zoning, and fire codes.

Inspection and Maintenance

- Vehicles and equipment should be inspected each day of use for leaks. Leaks should be repaired immediately or problem vehicles or equipment should be removed from the project site.

- Keep ample supplies of spill cleanup materials onsite.

- Immediately clean up spills and properly dispose of contaminated soil and cleanup materials.

References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance, Working Group Working Paper; USEPA, April 1992.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.

Silt Fence

SE-1

Objectives

EC	Erosion Control	
SE	Sediment Control	☑
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-5 Fiber Rolls

SE-6 Gravel Bag Berm

SE-8 Sandbag Barrier

SE-9 Straw Bale Barrier

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Description and Purpose

A silt fence is made of a filter fabric that has been entrenched, attached to supporting poles, and sometimes backed by a plastic or wire mesh for support. The silt fence detains sediment-laden water, promoting sedimentation behind the fence.

Suitable Applications

Silt fences are suitable for perimeter control, placed below areas where sheet flows discharge from the site. They should also be used as interior controls below disturbed areas where runoff may occur in the form of sheet and rill erosion. Silt fences are generally ineffective in locations where the flow is concentrated and are only applicable for sheet or overland flows. Silt fences are most effective when used in combination with erosion controls. Suitable applications include:

- Along the perimeter of a project.
- Below the toe or down slope of exposed and erodible slopes.
- Along streams and channels.
- Around temporary spoil areas and stockpiles.
- Below other small cleared areas.

Limitations

- Do not use in streams, channels, drain inlets, or anywhere flow is concentrated.

- Do not use in locations where ponded water may cause flooding.
- Do not place fence on a slope, or across any contour line. If not installed at the same elevation throughout, silt fences will create erosion.
- Filter fences will create a temporary sedimentation pond on the upstream side of the fence and may cause temporary flooding. Fences not constructed on a level contour will be overtopped by concentrated flow resulting in failure of the filter fence.
- Improperly installed fences are subject to failure from undercutting, overlapping, or collapsing.
  - Not effective unless trenched and keyed in.
  - Not intended for use as mid-slope protection on slopes greater than 4:1 (H:V).
  - Do not allow water depth to exceed 1.5 ft at any point.

Implementation

General

A silt fence is a temporary sediment barrier consisting of filter fabric stretched across and attached to supporting posts, entrenched, and, depending upon the strength of fabric used, supported with plastic or wire mesh fence. Silt fences trap sediment by intercepting and detaining small amounts of sediment-laden runoff from disturbed areas in order to promote sedimentation behind the fence.

Silt fences are preferable to straw bale barriers in many cases. Laboratory work at the Virginia Highway and Transportation Research Council has shown that silt fences can trap a much higher percentage of suspended sediments than can straw bales. While the failure rate of silt fences is lower than that of straw bale barriers, there are many instances where silt fences have been improperly installed. The following layout and installation guidance can improve performance and should be followed:

- Use principally in areas where sheet flow occurs.
- Don't use in streams, channels, or anywhere flow is concentrated. Don't use silt fences to divert flow.
- Don't use below slopes subject to creep, slumping, or landslides.
- Select filter fabric that retains 85% of soil by weight, based on sieve analysis, but that is not finer than an equivalent opening size of 70.
- Install along a level contour, so water does not pond more than 1.5 ft at any point along the silt fence.
- The maximum length of slope draining to any point along the silt fence should be 200 ft or less.
- The maximum slope perpendicular to the fence line should be 1:1.

- Provide sufficient room for runoff to pond behind the fence and to allow sediment removal equipment to pass between the silt fence and toes of slopes or other obstructions. About 1200 ft^2 of ponding area should be provided for every acre draining to the fence.
- Turn the ends of the filter fence uphill to prevent stormwater from flowing around the fence.
- Leave an undisturbed or stabilized area immediately down slope from the fence where feasible.
- Silt fences should remain in place until the disturbed area is permanently stabilized.

Design and Layout

Selection of a filter fabric is based on soil conditions at the construction site (which affect the equivalent opening size (EOS) fabric specification) and characteristics of the support fence (which affect the choice of tensile strength). The designer should specify a filter fabric that retains the soil found on the construction site yet that it has openings large enough to permit drainage and prevent clogging. The following criteria is recommended for selection of the equivalent opening size:

1. If 50 percent or less of the soil, by weight, will pass the U.S. Standard Sieve No. 200, select the EOS to retain 85 % of the soil. The EOS should not be finer than EOS 70.
2. For all other soil types, the EOS should be no larger than the openings in the U.S. Standard Sieve No. 70 except where direct discharge to a stream, lake, or wetland will occur, then the EOS should be no larger than Standard Sieve No. 100.

To reduce the chance of clogging, it is preferable to specify a fabric with openings as large as allowed by the criteria. No fabric should be specified with an EOS smaller than U.S. Standard Sieve No. 100. If 85% or more of a soil, by weight, passes through the openings in a No. 200 sieve, filter fabric should not be used. Most of the particles in such a soil would not be retained if the EOS was too large and they would clog the fabric quickly if the EOS were small enough to capture the soil.

The fence should be supported by a plastic or wire mesh if the fabric selected does not have sufficient strength and bursting strength characteristics for the planned application (as recommended by the fabric manufacturer). Filter fabric material should contain ultraviolet inhibitors and stabilizers to provide a minimum of six months of expected usable construction life at a temperature range of 0 °F to 120 °F.

- Layout in accordance with attached figures.
- For slopes steeper than 2:1 (H:V) and that contain a high number of rocks or large dirt clods that tend to dislodge, it may be necessary to install additional protection immediately adjacent to the bottom of the slope, prior to installing silt fence. Additional protection may be a chain link fence or a cable fence.
- For slopes adjacent to sensitive receiving waters or Environmentally Sensitive Areas (ESAs), silt fence should be used in conjunction with erosion control BMPs.

Materials

- Silt fence fabric should be woven polypropylene with a minimum width of 36 in. and a minimum tensile strength of 100 lb force. The fabric should conform to the requirements in ASTM designation D4632 and should have an integral reinforcement layer. The reinforcement layer should be a polypropylene, or equivalent, net provided by the manufacturer. The permittivity of the fabric should be between 0.1 sec^{-1} and 0.15 sec^{-1} in conformance with the requirements in ASTM designation D4491.

- Wood stakes should be commercial quality lumber of the size and shape shown on the plans. Each stake should be free from decay, splits or cracks longer than the thickness of the stake or other defects that would weaken the stakes and cause the stakes to be structurally unsuitable.

- Staples used to fasten the fence fabric to the stakes should be not less than 1.75 in. long and should be fabricated from 15 gauge or heavier wire. The wire used to fasten the tops of the stakes together when joining two sections of fence should be 9 gauge or heavier wire. Galvanizing of the fastening wire will not be required.

- There are new products that may use prefabricated plastic holders for the silt fence and use bar reinforcement instead of wood stakes. If bar reinforcement is used in lieu of wood stakes, use number four or greater bar. Provide end protection for any exposed bar reinforcement.

Installation Guidelines

Silt fences are to be constructed on a level contour. Sufficient area should exist behind the fence for ponding to occur without flooding or overtopping the fence.

- A trench should be excavated approximately 6 in. wide and 6 in. deep along the line the proposed silt fence.

- Bottom of the silt fence should be keyed-in a minimum of 12 in.

- Posts should be spaced a maximum of 6 ft apart and driven securely into the ground a minimum of 18 in. or 12 in. below the bottom of the trench.

- When standard strength filter fabric is used, a plastic or wire mesh support fence should be fastened securely to the upslope side of posts using heavy–duty wire staples at least 1 in. long. The mesh should extend into the trench. When extra-strength filter fabric and closer post spacing are used, the mesh support fence may be eliminated. Filter fabric should be purchased in a long roll, and then cut to the length of the barrier. When joints are necessary, filter cloth should be spliced together only at a support post, with a minimum 6 in. overlap and both ends securely fastened to the post.

- The trench should be backfilled with compacted native material.

- Construct silt fences with a setback of at least 3 ft from the toe of a slope. Where a silt fence is determined to be not practicable due to specific site conditions, the silt fence may be constructed at the toe of the slope, but should be constructed as far from the toe of the slope as practicable. Silt fences close to the toe of the slope will be less effective and difficult to maintain.

- Construct the length of each reach so that the change in base elevation along the reach does not exceed 1/3 the height of the barrier; in no case should the reach exceed 500 ft.

Costs

- Average annual cost for installation and maintenance (assumes 6 month useful life): $7 per lineal foot ($850 per drainage acre). Range of cost is $3.50 - $9.10 per lineal foot.

Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- Repair undercut silt fences.
- Repair or replace split, torn, slumping, or weathered fabric. The lifespan of silt fence fabric is generally 5 to 8 months.
- Silt fences that are damaged and become unsuitable for the intended purpose should be removed from the site of work, disposed of, and replaced with new silt fence barriers.
- Sediment that accumulates in the BMP must be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height. Sediment removed during maintenance may be incorporated into earthwork on the site or disposed at an appropriate location.
- Silt fences should be left in place until the upstream area is permanently stabilized. Until then, the silt fence must be inspected and maintained.
- Holes, depressions, or other ground disturbance caused by the removal of the silt fences should be backfilled and repaired.

References

Manual of Standards of Erosion and Sediment Control Measures, Association of Bay Area Governments, May 1995.

National Management Measures to Control Nonpoint Source Pollution from Urban Areas, United States Environmental Protection Agency, 2002.

Proposed Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters, Work Group-Working Paper, USEPA, April 1992.

Sedimentation and Erosion Control Practices, and Inventory of Current Practices (Draft), UESPA, 1990.

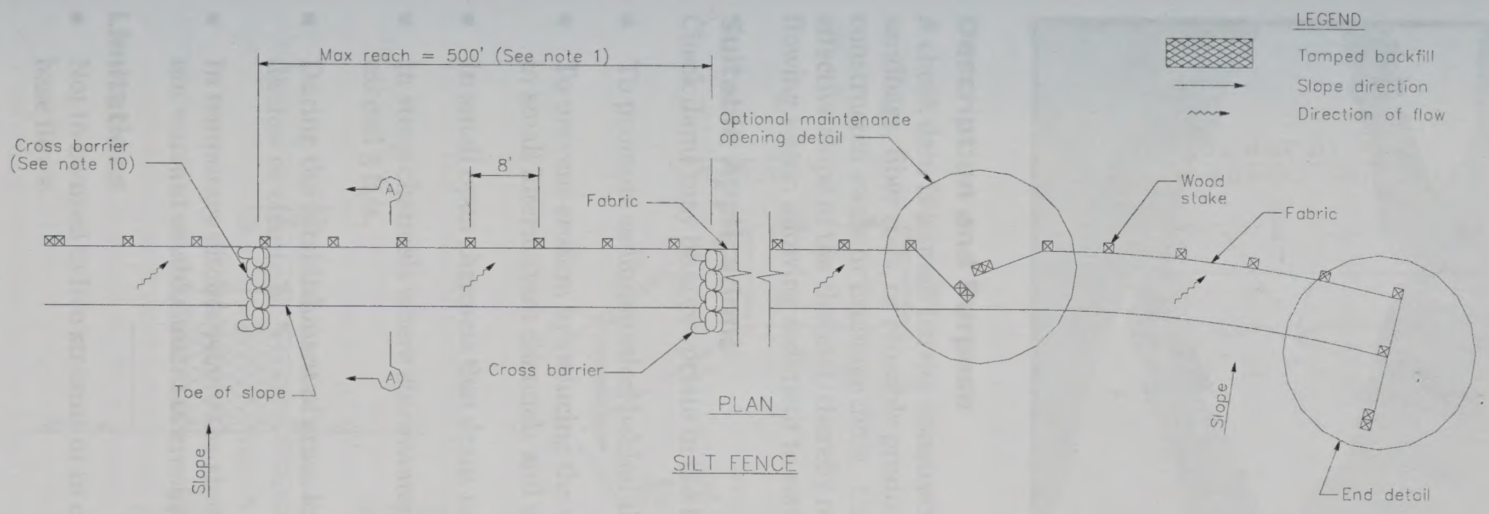
Southeastern Wisconsin Regional Planning Commission (SWRPC). Costs of Urban Nonpoint Source Water Pollution Control Measures. Technical Report No. 31. Southeastern Wisconsin Regional Planning Commission, Waukesha, WI. 1991

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management Manual for The Puget Sound Basin, Washington State Department of Ecology, Public Review Draft, 1991.

U.S. Environmental Protection Agency (USEPA). Stormwater Management for Industrial Activities: Developing Pollution Prevention Plans and Best Management Practices. U.S. Environmental Protection Agency, Office of Water, Washington, DC, 1992.

Water Quality Management Plan for the Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.

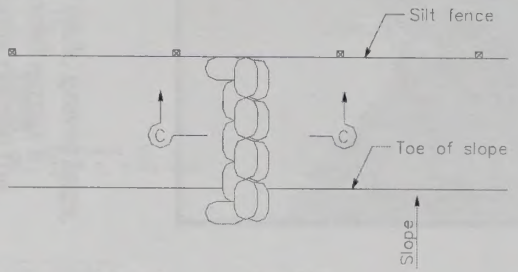


PLAN

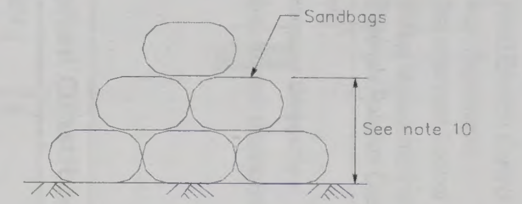
SILT FENCE

NOTES

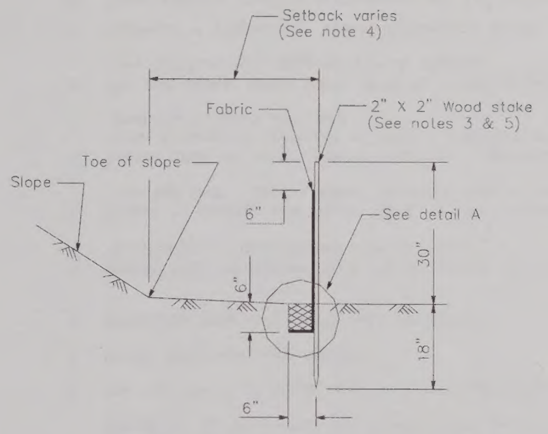
1. Construct the length of each reach so that the change in base elevation along the reach does not exceed 1/3 the height of the linear barrier, in no case shall the reach length exceed 500'.
2. The last 8'-0" of fence shall be turned up slope.
3. Stake dimensions are nominal.
4. Dimension may vary to fit field condition.
5. Stakes shall be spaced at 8'-0" maximum and shall be positioned on downstream side of fence.
6. Stakes to overlap and fence fabric to fold around each stake one full turn. Secure fabric to stake with 4 staples.
7. Stakes shall be driven tightly together to prevent potential flow-through of sediment at joint. The tops of the stakes shall be secured with wire.
8. For end stake, fence fabric shall be folded around two stakes one full turn and secured with 4 staples.
9. Minimum 4 staples per stake. Dimensions shown are typical.
10. Cross barriers shall be a minimum of 1/3 and a maximum of 1/2 the height of the linear barrier.
11. Maintenance openings shall be constructed in a manner to ensure sediment remains behind silt fence.
12. Joining sections shall not be placed at sump locations.
13. Sandbag rows and layers shall be offset to eliminate gaps.



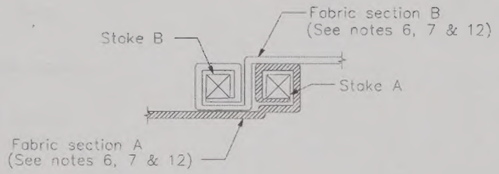
CROSS BARRIER DETAIL



SECTION C-C



SECTION A–A



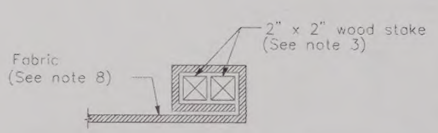
JOINING SECTION DETAIL (TOP VIEW)

LEGEND

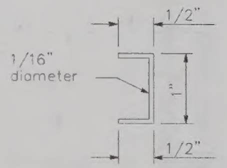
▨ Tamped backfill

→ Slope direction

~→ Direction of flow

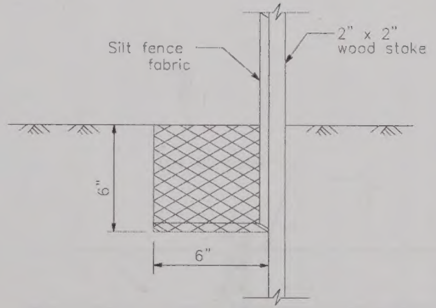


END STAKE DETAIL (TOP VIEW)

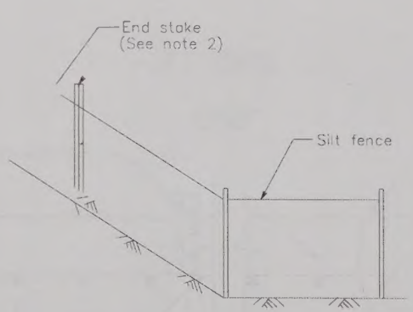


STAPLE DETAIL

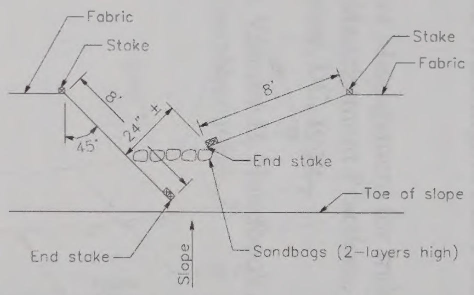
(SEE NOTE 9)



DETAIL A



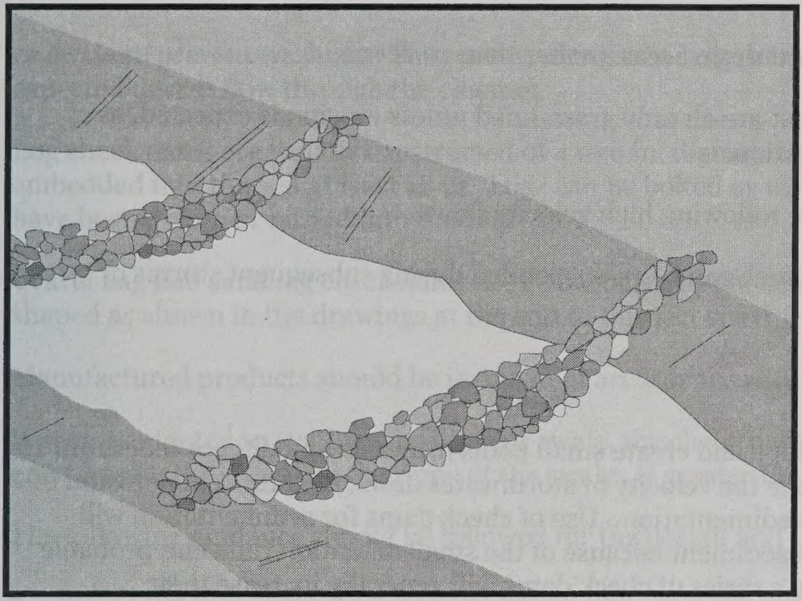
END DETAIL



OPTIONAL MAINTENANCE OPENING DETAIL

(SEE NOTE 11)

Check Dams SE-4



Objectives

EC	Erosion Control	☒
SE	Sediment Control	☑
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-5 Fiber Rolls

SE-6 Gravel Bag Berm

SE-8 Sandbag Barrier

Description and Purpose

A check dam is a small barrier constructed of rock, gravel bags, sandbags, fiber rolls, or reusable products, placed across a constructed swale or drainage ditch. Check dams reduce the effective slope of the channel, thereby reducing the velocity of flowing water, allowing sediment to settle and reducing erosion.

Suitable Applications

Check dams may be appropriate in the following situations:

- To promote sedimentation behind the dam.
- To prevent erosion by reducing the velocity of channel flow in small intermittent channels and temporary swales.
- In small open channels that drain 10 acres or less.
- In steep channels where stormwater runoff velocities exceed 5 ft/s.
- During the establishment of grass linings in drainage ditches or channels.
- In temporary ditches where the short length of service does not warrant establishment of erosion-resistant linings.

Limitations

- Not to be used in live streams or in channels with extended base flows.

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- Not appropriate in channels that drain areas greater than 10 acres.
- Not appropriate in channels that are already grass-lined unless erosion is expected, as installation may damage vegetation.
- Require extensive maintenance following high velocity flows.
- Promotes sediment trapping which can be re-suspended during subsequent storms or removal of the check dam.

Implementation

General

Check dams reduce the effective slope and create small pools in swales and ditches that drain 10 acres or less. Reduced slopes reduce the velocity of stormwater flows, thus reducing erosion of the swale or ditch and promoting sedimentation. Use of check dams for sedimentation will likely result in little net removal of sediment because of the small detention time and probable scour during longer storms. Using a series of check dams will generally increase their effectiveness. A sediment trap (SE-3) may be placed immediately upstream of the check dam to increase sediment removal efficiency.

Design and Layout

Check dams work by decreasing the effective slope in ditches and swales. An important consequence of the reduced slope is a reduction in capacity of the ditch or swale. This reduction in capacity must be considered when using this BMP, as reduced capacity can result in overtopping of the ditch or swale and resultant consequences. In some cases, such as a "permanent" ditch or swale being constructed early and used as a "temporary" conveyance for construction flows, the ditch or swale may have sufficient capacity such that the temporary reduction in capacity due to check dams is acceptable. When check dams reduce capacities beyond acceptable limits, there are several options:

- Don't use check dams. Consider alternative BMPs.
- Increase the size of the ditch or swale to restore capacity.

Maximum slope and velocity reduction is achieved when the toe of the upstream dam is at the same elevation as the top of the downstream dam. The center section of the dam should be lower than the edge sections so that the check dam will direct flows to the center of the ditch or swale.

Check dams are usually constructed of rock, gravel bags, sandbags, and fiber rolls. A number of products manufactured specifically for use as check dams are also being used, and some of these products can be removed and reused. Check dams can also be constructed of logs or lumber, and have the advantage of a longer lifespan when compared to gravel bags, sandbags, and fiber rolls. Straw bales can also be used for check dams and can work if correctly installed; but in practice, straw bale check dams have a high failure rate. Check dams should not be constructed from straw bales or silt fences, since concentrated flows quickly wash out these materials.

Rock check dams are usually constructed of 8 to 12 in. rock. The rock is placed either by hand or mechanically, but never just dumped into the channel. The dam must completely span the ditch or swale to prevent washout. The rock used must be large enough to stay in place given the expected design flow through the channel.

Log check dams are usually constructed of 4 to 6 in. diameter logs. The logs should be embedded into the soil at least 18 in. Logs can be bolted or wired to vertical support logs that have been driven or buried into the soil.

Gravel bag and sandbag check dams are constructed by stacking bags across the ditch or swale, shaped as shown in the drawings at the end of this fact sheet.

Manufactured products should be installed in accordance with the manufacturer's instructions.

If grass is planted to stabilize the ditch or swale, the check dam should be removed when the grass has matured (unless the slope of the swales is greater than 4%).

The following guidance should be followed for the design and layout of check dams:

- Install the first check dam approximately 16 ft from the outfall device and at regular intervals based on slope gradient and soil type.
- Check dams should be placed at a distance and height to allow small pools to form between each check dam.
- Backwater from a downstream check dam should reach the toes of the upstream check dam.
- A sediment trap provided immediately upstream of the check dam will help capture sediment. Due to the potential for this sediment to be resuspended in subsequent storms, the sediment trap must be cleaned following each storm event.
- High flows (typically a 2-year storm or larger) should safely flow over the check dam without an increase in upstream flooding or damage to the check dam.
- Where grass is used to line ditches, check dams should be removed when grass has matured sufficiently to protect the ditch or swale.
- Gravel bags may be used as check dams with the following specifications:

Materials

Gravel bags used for check dams should conform to the requirements of SE-6, Gravel Bag Berms. Sandbags used for check dams should conform to SE-8, Sandbag Barrier. Fiber rolls used for check dams should conform to SE-5, Fiber Rolls. Straw bales used for check dams should conform to SE-9, Straw Bale Barrier.

Installation

- Rock should be placed individually by hand or by mechanical methods (no dumping of rock) to achieve complete ditch or swale coverage.
- Tightly abut bags and stack according to detail shown in the figure at the end of this section. Gravel bags and sandbags should not be stacked any higher than 3 ft.
- Fiber rolls and straw bales must be trenched in and firmly staked in place.

Costs

Cost consists of only installation costs if materials are readily available. If material must be imported, costs may increase. For material costs, see SE-5, SE-6, SE-8 and SE-9.

Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- Replace missing rock, bags, bales, etc. Replace bags or bales that have degraded or have become damaged.
- If the check dam is used as a sediment capture device, sediment that accumulates in the BMP must be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height. Sediment removed during maintenance may be incorporated into earthwork on the site or disposed at an appropriate location.
- If the check dam is used as a grade control structure, sediment removal is not required as long as the system continues to control the grade.
- Remove accumulated sediment prior to permanent seeding or soil stabilization.
- Remove check dam and accumulated sediment when check dams are no longer needed.

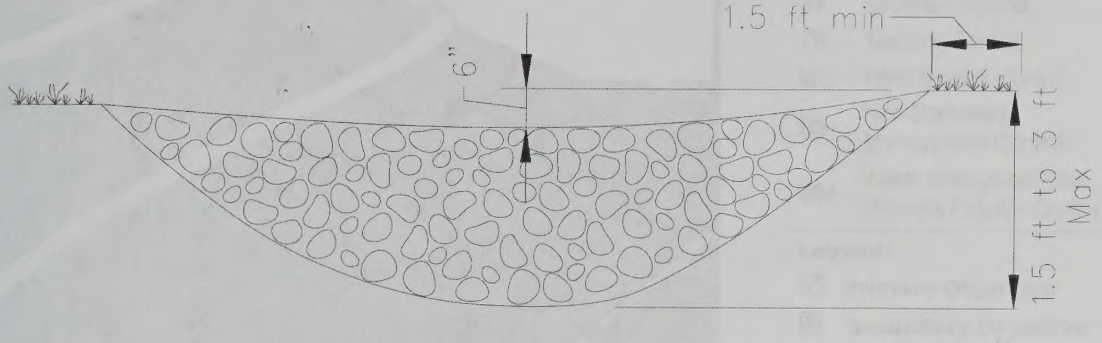
References

Draft – Sedimentation and Erosion Control, and Inventory of Current Practices, USEPA, April 1990.

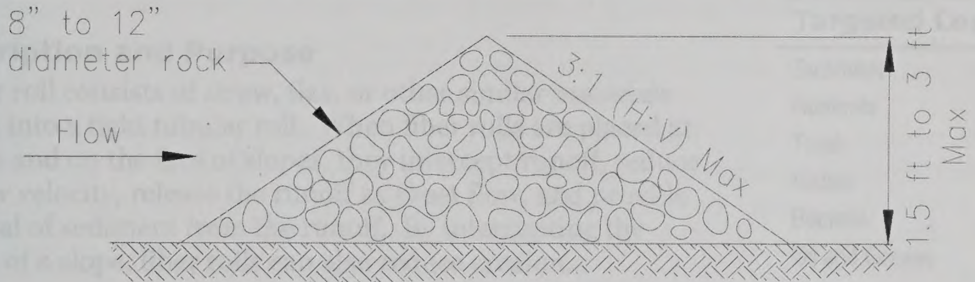
Manual of Standards of Erosion and Sediment Control Measures, Association of Bay Area Governments, May 1995.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management of the Puget Sound Basin, Technical Manual, Publication #91-75, Washington State Department of Ecology, February 1992.



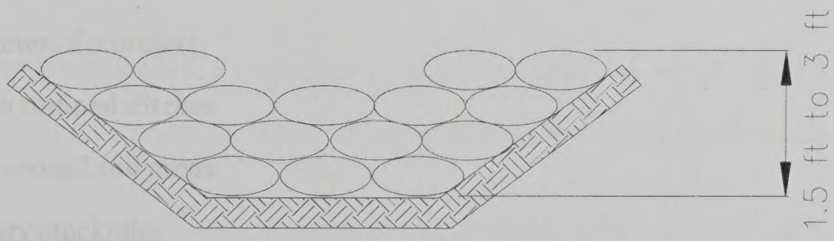
ELEVATION



TYPICAL ROCK CHECK DAM SECTION

ROCK CHECK DAM

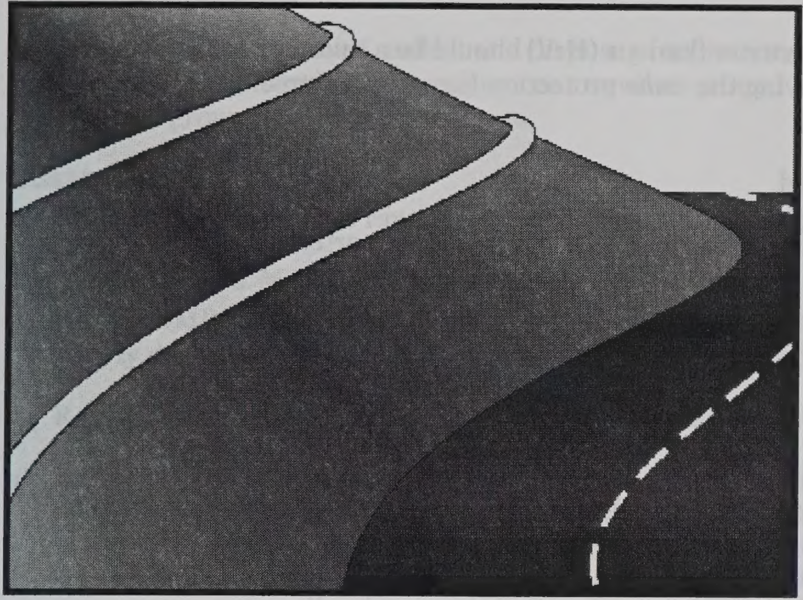
NOT TO SCALE



GRAVEL BAG CHECK DAM ELEVATION

NOT TO SCALE

Fiber Rolls SE-5



Description and Purpose

A fiber roll consists of straw, flax, or other similar materials bound into a tight tubular roll. When fiber rolls are placed at the toe and on the face of slopes, they intercept runoff, reduce its flow velocity, release the runoff as sheet flow, and provide removal of sediment from the runoff. By interrupting the length of a slope, fiber rolls can also reduce erosion.

Suitable Applications

Fiber rolls may be suitable:

- Along the toe, top, face, and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow
- At the end of a downward slope where it transitions to a steeper slope
- Along the perimeter of a project
- As check dams in unlined ditches
- Down-slope of exposed soil areas
- Around temporary stockpiles

Limitations

- Fiber rolls are not effective unless trenched

Objectives

EC	Erosion Control	☒
SE	Sediment Control	☑
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-1 Silt Fence

SE-6 Gravel Bag Berm

SE-8 Sandbag Barrier

SE-9 Straw Bale Barrier

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- Fiber rolls at the toe of slopes greater than 5:1 (H:V) should be a minimum of 20 in. diameter or installations achieving the same protection (i.e. stacked smaller diameter fiber rolls, etc.).
- Difficult to move once saturated.
- If not properly staked and trenched in, fiber rolls could be transported by high flows.
- Fiber rolls have a very limited sediment capture zone.
- Fiber rolls should not be used on slopes subject to creep, slumping, or landslide.

Implementation

Fiber Roll Materials

- Fiber rolls should be either prefabricated rolls or rolled tubes of erosion control blanket.

Assembly of Field Rolled Fiber Roll

- Roll length of erosion control blanket into a tube of minimum 8 in. diameter.
- Bind roll at each end and every 4 ft along length of roll with jute-type twine.

Installation

- Locate fiber rolls on level contours spaced as follows:
    - Slope inclination of 4:1 (H:V) or flatter: Fiber rolls should be placed at a maximum interval of 20 ft.
    - Slope inclination between 4:1 and 2:1 (H:V): Fiber Rolls should be placed at a maximum interval of 15 ft. (a closer spacing is more effective).
    - Slope inclination 2:1 (H:V) or greater: Fiber Rolls should be placed at a maximum interval of 10 ft. (a closer spacing is more effective).
- Turn the ends of the fiber roll up slope to prevent runoff from going around the roll.
- Stake fiber rolls into a 2 to 4 in. deep trench with a width equal to the diameter of the fiber roll.
    - Drive stakes at the end of each fiber roll and spaced 4 ft maximum on center.
    - Use wood stakes with a nominal classification of 0.75 by 0.75 in. and minimum length of 24 in.
- If more than one fiber roll is placed in a row, the rolls should be overlapped, not abutted.

Removal

- Fiber rolls are typically left in place.

- If fiber rolls are removed, collect and dispose of sediment accumulation, and fill and compact holes, trenches, depressions or any other ground disturbance to blend with adjacent ground.

Costs

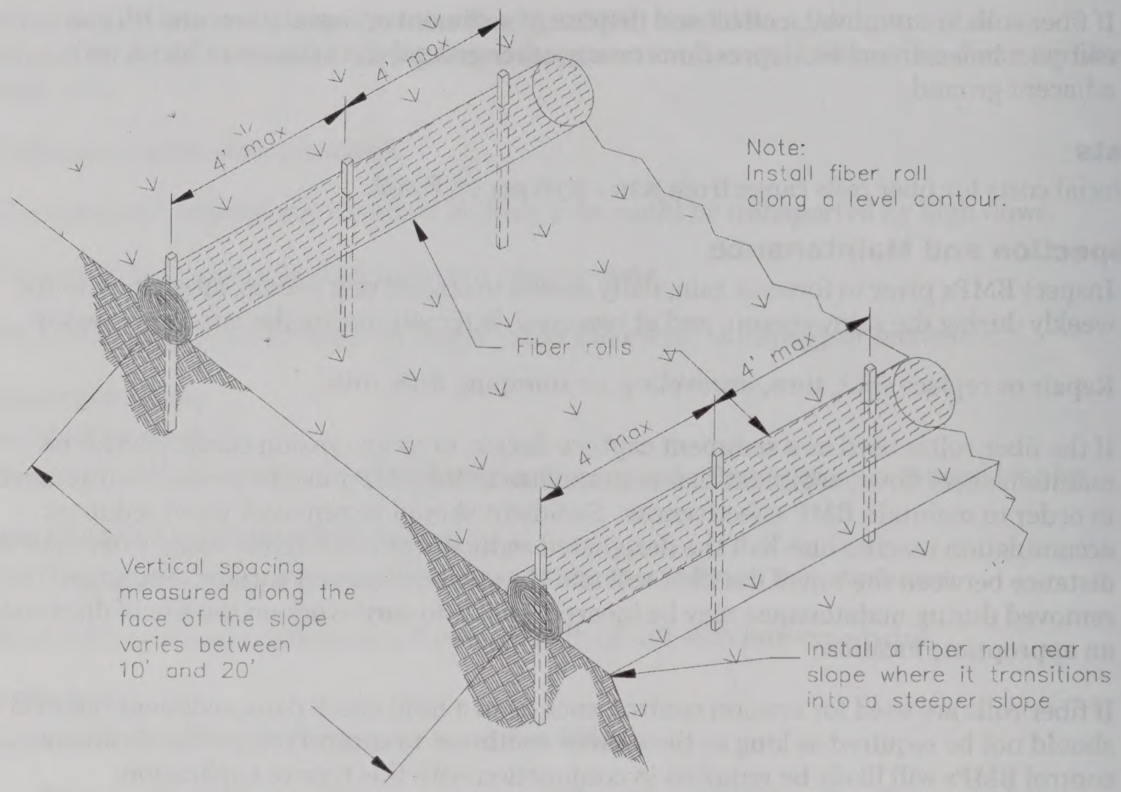
Material costs for fiber rolls range from $20 - $30 per 25 ft roll.

Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- Repair or replace split, torn, unraveling, or slumping fiber rolls.
- If the fiber roll is used as a sediment capture device, or as an erosion control device to maintain sheet flows, sediment that accumulates in the BMP must be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when sediment accumulation reaches one-half the designated sediment storage depth, usually one-half the distance between the top of the fiber roll and the adjacent ground surface. Sediment removed during maintenance may be incorporated into earthwork on the site of disposed at an appropriate location.
- If fiber rolls are used for erosion control, such as in a mini check dam, sediment removal should not be required as long as the system continues to control the grade. Sediment control BMPs will likely be required in conjunction with this type of application.

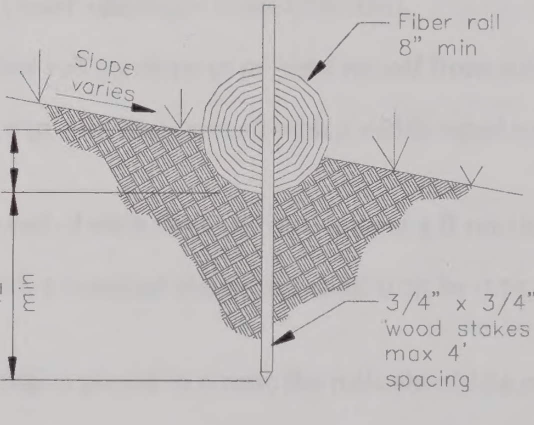
References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.



TYPICAL FIBER ROLL INSTALLATION

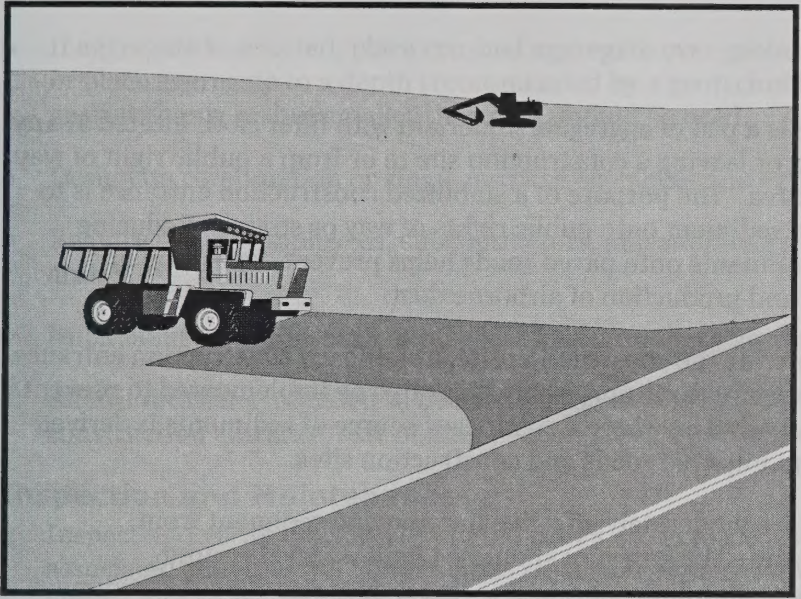
N.T.S.



ENTRENCHMENT DETAIL

N.T.S.

Stabilized Construction Entrance/Exit TC-1



Description and Purpose

A stabilized construction access is defined by a point of entrance/exit to a construction site that is stabilized to reduce the tracking of mud and dirt onto public roads by construction vehicles.

Suitable Applications

Use at construction sites:

- Where dirt or mud can be tracked onto public roads.
- Adjacent to water bodies.
- Where poor soils are encountered.
- Where dust is a problem during dry weather conditions.

Limitations

- Entrances and exits require periodic top dressing with additional stones.
- This BMP should be used in conjunction with street sweeping on adjacent public right of way.
- Entrances and exits should be constructed on level ground only.
- Stabilized construction entrances are rather expensive to construct and when a wash rack is included, a sediment trap of some kind must also be provided to collect wash water runoff.

Objectives

EC	Erosion Control	☒
SE	Sediment Control	☒
TC	Tracking Control	☑
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

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Implementation

General

A stabilized construction entrance is a pad of aggregate underlain with filter cloth located at any point where traffic will be entering or leaving a construction site to or from a public right of way, street, alley, sidewalk, or parking area. The purpose of a stabilized construction entrance is to reduce or eliminate the tracking of sediment onto public rights of way or streets. Reducing tracking of sediments and other pollutants onto paved roads helps prevent deposition of sediments into local storm drains and production of airborne dust.

Where traffic will be entering or leaving the construction site, a stabilized construction entrance should be used. NPDES permits require that appropriate measures be implemented to prevent tracking of sediments onto paved roadways, where a significant source of sediments is derived from mud and dirt carried out from unpaved roads and construction sites.

Stabilized construction entrances are moderately effective in removing sediment from equipment leaving a construction site. The entrance should be built on level ground. Advantages of the Stabilized Construction Entrance/Exit is that it does remove some sediment from equipment and serves to channel construction traffic in and out of the site at specified locations. Efficiency is greatly increased when a washing rack is included as part of a stabilized construction entrance/exit.

Design and Layout

- Construct on level ground where possible.
- Select 3 to 6 in. diameter stones.
- Use minimum depth of stones of 12 in. or as recommended by soils engineer.
- Construct length of 50 ft minimum, and 30 ft minimum width.
- Rumble racks constructed of steel panels with ridges and installed in the stabilized entrance/exit will help remove additional sediment and to keep adjacent streets clean.
- Provide ample turning radii as part of the entrance.
- Limit the points of entrance/exit to the construction site.
- Limit speed of vehicles to control dust.
- Properly grade each construction entrance/exit to prevent runoff from leaving the construction site.
- Route runoff from stabilized entrances/exits through a sediment trapping device before discharge.
- Design stabilized entrance/exit to support heaviest vehicles and equipment that will use it.
- Select construction access stabilization (aggregate, asphaltic concrete, concrete) based on longevity, required performance, and site conditions. Do not use asphalt concrete (AC) grindings for stabilized construction access/roadway.

- If aggregate is selected, place crushed aggregate over geotextile fabric to at least 12 in. depth, or place aggregate to a depth recommended by a geotechnical engineer. A crushed aggregate greater than 3 in. but smaller than 6 in. should be used.
- Designate combination or single purpose entrances and exits to the construction site.
- Require that all employees, subcontractors, and suppliers utilize the stabilized construction access.
- Implement SE-7, Street Sweeping and Vacuuming, as needed.
- All exit locations intended to be used for more than a two-week period should have stabilized construction entrance/exit BMPs.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMPs are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect local roads adjacent to the site daily. Sweep or vacuum to remove visible accumulated sediment.
- Remove aggregate, separate and dispose of sediment if construction entrance/exit is clogged with sediment.
- Keep all temporary roadway ditches clear.
- Check for damage and repair as needed.
- Replace gravel material when surface voids are visible.
- Remove all sediment deposited on paved roadways within 24 hours.
- Remove gravel and filter fabric at completion of construction

Costs

Average annual cost for installation and maintenance may vary from $1,200 to $4,800 each, averaging $2,400 per entrance. Costs will increase with addition of washing rack, and sediment trap. With wash rack, costs range from $1,200 - $6,000 each, averaging $3,600 per entrance.

References

Manual of Standards of Erosion and Sediment Control Measures, Association of Bay Area Governments, May 1995.

National Management Measures to Control Nonpoint Source Pollution from Urban Areas, USEPA Agency, 2002.

Proposed Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters, Work Group Working Paper, USEPA, April 1992.

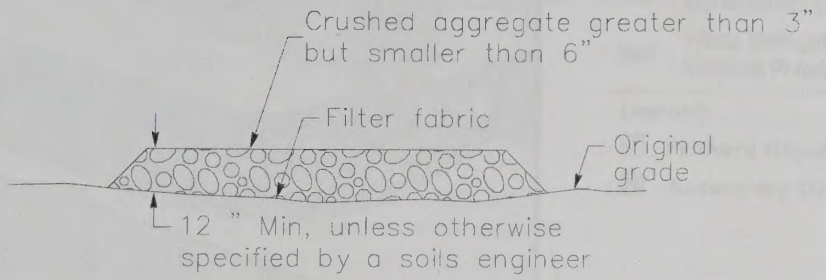
Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management of the Puget Sound Basin, Technical Manual, Publication #91-75, Washington State Department of Ecology, February 1992.

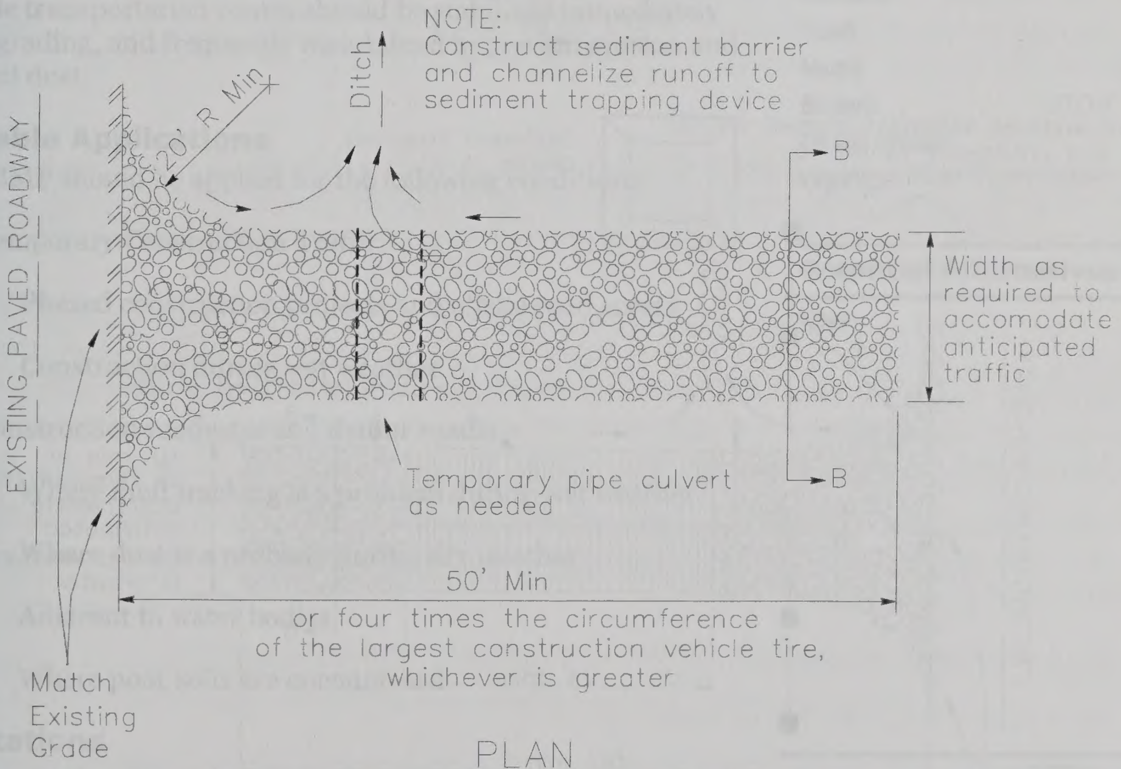
Virginia Erosion and Sedimentation Control Handbook, Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation, 1991.

Guidance Specifying Management Measures for Nonpoint Pollution in Coastal Waters, EPA 840-B-9-002, USEPA, Office of Water, Washington, DC, 1993.

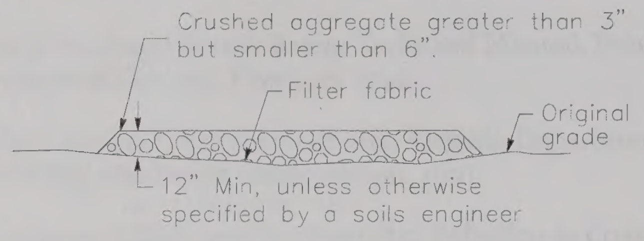
Water Quality Management Plan for the Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.


Crushed aggregate greater than 3" but smaller than 6"
Filter fabric
Original grade
12 " Min, unless otherwise specified by a soils engineer

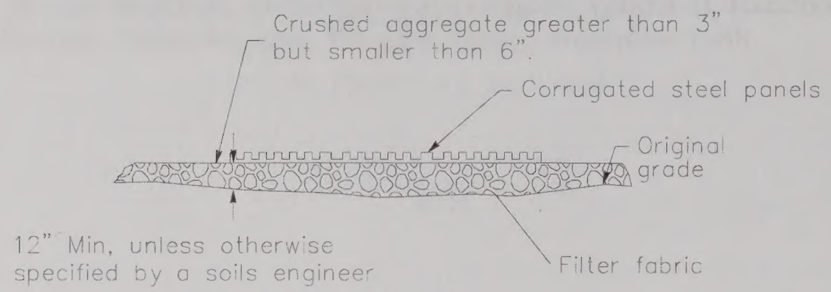
SECTION B–B
NTS


NOTE:
Construct sediment barrier and channelize runoff to sediment trapping device
Ditch
20' R Min
EXISTING PAVED ROADWAY
B
B
Width as required to accomodate anticipated traffic
Temporary pipe culvert as needed
50' Min
or four times the circumference of the largest construction vehicle tire, whichever is greater
Match Existing Grade

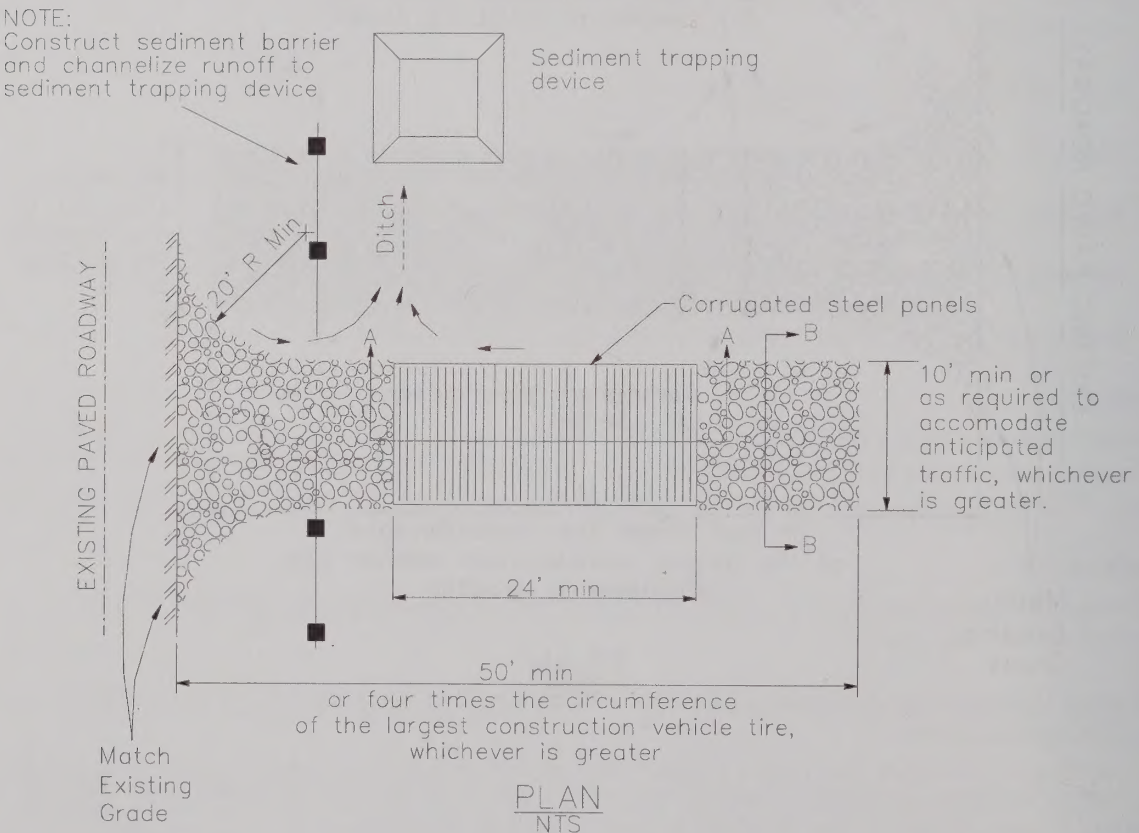
PLAN
NTS


Crushed aggregate greater than 3" but smaller than 6".
Filter fabric
Original grade
12" Min, unless otherwise specified by a soils engineer

SECTION B-B
NTS

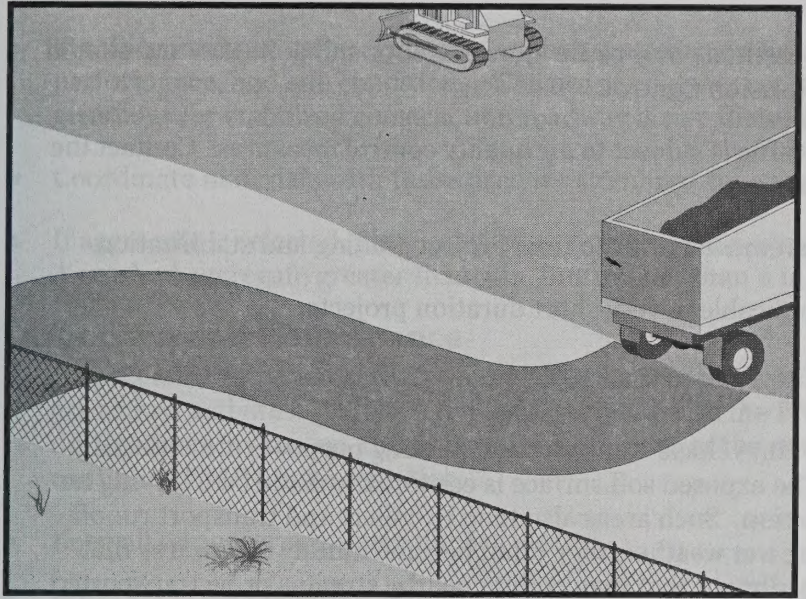

Crushed aggregate greater than 3" but smaller than 6".
Corrugated steel panels
Original grade
12" Min, unless otherwise specified by a soils engineer
Filter fabric

SECTION A-A
NOT TO SCALE


NOTE:
Construct sediment barrier and channelize runoff to sediment trapping device
Sediment trapping device
Ditch
20' R Min
EXISTING PAVED ROADWAY
Corrugated steel panels
A
A
B
B
10' min or as required to accomodate anticipated traffic, whichever is greater.
24' min.
50' min or four times the circumference of the largest construction vehicle tire, whichever is greater
Match Existing Grade

PLAN
NTS

Stabilized Construction Roadway TC-2



Objectives

EC	Erosion Control	☒
SE	Sediment Control	☒
TC	Tracking Control	☑
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

Access roads, subdivision roads, parking areas, and other onsite vehicle transportation routes should be stabilized immediately after grading, and frequently maintained to prevent erosion and control dust.

Suitable Applications

This BMP should be applied for the following conditions:

- Temporary Construction Traffic:
    - Phased construction projects and offsite road access
    - Construction during wet weather
- Construction roadways and detour roads:
    - Where mud tracking is a problem during wet weather
    - Where dust is a problem during dry weather
    - Adjacent to water bodies
    - Where poor soils are encountered

Limitations

- The roadway must be removed or paved when construction is complete.

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- Certain chemical stabilization methods may cause stormwater or soil pollution and should not be used. See WE-1, Wind Erosion Control.
- Management of construction traffic is subject to air quality control measures. Contact the local air quality management agency.
- Materials will likely need to be removed prior to final project grading and stabilization.
- Use of this BMP may not be applicable to very short duration projects.

Implementation

General

Areas that are graded for construction vehicle transport and parking purposes are especially susceptible to erosion and dust. The exposed soil surface is continually disturbed, leaving no opportunity for vegetative stabilization. Such areas also tend to collect and transport runoff waters along their surfaces. During wet weather, they often become muddy quagmires that generate significant quantities of sediment that may pollute nearby streams or be transported offsite on the wheels of construction vehicles. Dirt roads can become so unstable during wet weather that they are virtually unusable.

Efficient construction road stabilization not only reduces onsite erosion but also can significantly speed onsite work, avoid instances of immobilized machinery and delivery vehicles, and generally improve site efficiency and working conditions during adverse weather

Installation/Application Criteria

Permanent roads and parking areas should be paved as soon as possible after grading. As an alternative where construction will be phased, the early application of gravel or chemical stabilization may solve potential erosion and stability problems. Temporary gravel roadway should be considered during the rainy season and on slopes greater than 5%.

Temporary roads should follow the contour of the natural terrain to the maximum extent possible. Slope should not exceed 15%. Roadways should be carefully graded to drain transversely. Provide drainage swales on each side of the roadway in the case of a crowned section or one side in the case of a super elevated section. Simple gravel berms without a trench can also be used.

Installed inlets should be protected to prevent sediment laden water from entering the storm sewer system (SE-10, Storm Drain Inlet Protection). In addition, the following criteria should be considered.

- Road should follow topographic contours to reduce erosion of the roadway.
- The roadway slope should not exceed 15%.
- Chemical stabilizers or water are usually required on gravel or dirt roads to prevent dust (WE-1, Wind Erosion Control).
- Properly grade roadway to prevent runoff from leaving the construction site.
- Design stabilized access to support heaviest vehicles and equipment that will use it.

- Stabilize roadway using aggregate, asphalt concrete, or concrete based on longevity, required performance, and site conditions. The use of cold mix asphalt or asphalt concrete (AC) grindings for stabilized construction roadway is not allowed.
- Coordinate materials with those used for stabilized construction entrance/exit points.
- If aggregate is selected, place crushed aggregate over geotextile fabric to at least 12 in. depth. A crushed aggregate greater than 3 in. but smaller than 6 in. should be used.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, impact weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
- Keep all temporary roadway ditches clear.
- When no longer required, remove stabilized construction roadway and re-grade and repair slopes.
- Periodically apply additional aggregate on gravel roads.
- Active dirt construction roads are commonly watered three or more times per day during the dry season.

Costs

Gravel construction roads are moderately expensive, but cost is often balanced by reductions in construction delay. No additional costs for dust control on construction roads should be required above that needed to meet local air quality requirements.

References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Coastal Nonpoint Pollution Control Program; Program Development and Approval Guidance, Working Group, Working Paper; USEPA, April 1992.

Manual of Standards of Erosion and Sediment Control Measures, Association of Bay Area Governments, May 1995.

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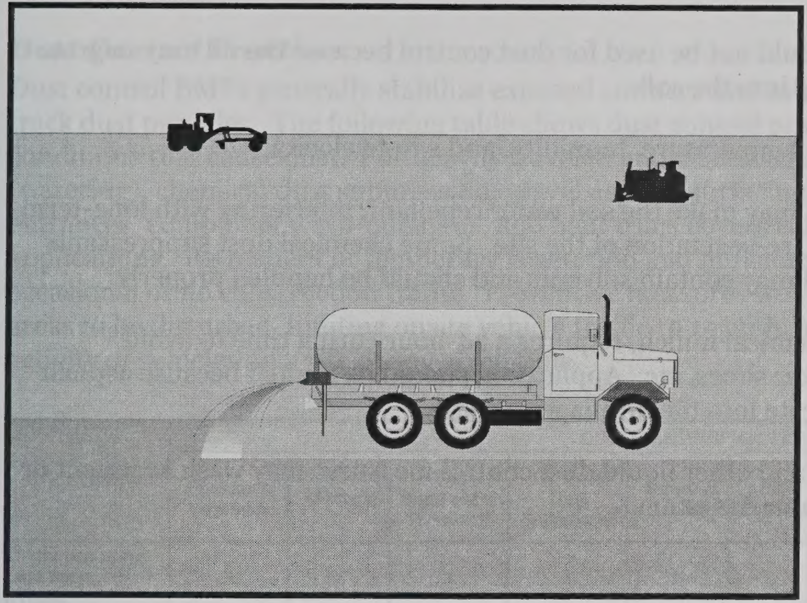
Stormwater Management of the Puget Sound Basin, Technical Manual, Publication #91-75, Washington State Department of Ecology, February 1992.

Virginia Erosion and Sedimentation Control Handbook, Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation, 1991.

Water Quality Management Plan for the Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.

Wind Erosion Control WE-1



Objectives

EC	Erosion Control	
SE	Sediment Control	☒
TC	Tracking Control	
WE	Wind Erosion Control	☑
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

Wind erosion or dust control consists of applying water or other dust palliatives as necessary to prevent or alleviate dust nuisance generated by construction activities. Covering small stockpiles or areas is an alternative to applying water or other dust palliatives.

Suitable Applications

Wind erosion control BMPs are suitable during the following construction activities:

- Construction vehicle traffic on unpaved roads
- Drilling and blasting activities
- Sediment tracking onto paved roads
- Soils and debris storage piles
- Batch drop from front-end loaders
- Areas with unstabilized soil
- Final grading/site stabilization

Limitations

- Watering prevents dust only for a short period and should be applied daily (or more often) to be effective.
- Over watering may cause erosion.

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- Oil or oil-treated subgrade should not be used for dust control because the oil may migrate into drainageways and/or seep into the soil.
- Effectiveness depends on soil, temperature, humidity, and wind velocity.
- Chemically treated sub grades may make the soil water repellant, interfering with long-term infiltration and the vegetation/re-vegetation of the site. Some chemical dust suppressants may be subject to freezing and may contain solvents and should be handled properly.
- Asphalt, as a mulch tack or chemical mulch, requires a 24-hour curing time to avoid adherence to equipment, worker shoes, etc. Application should be limited because asphalt surfacing may eventually migrate into the drainage system.
- In compacted areas, watering and other liquid dust control measures may wash sediment or other constituents into the drainage system.

Implementation

General

California's Mediterranean climate, with short wet seasons and long hot dry seasons, allows the soils to thoroughly dry out. During these dry seasons, construction activities are at their peak, and disturbed and exposed areas are increasingly subject to wind erosion, sediment tracking and dust generated by construction equipment.

Dust control, as a BMP, is a practice that is already in place for many construction activities. Los Angeles, the North Coast, and Sacramento, among others, have enacted dust control ordinances for construction activities that cause dust to be transported beyond the construction project property line.

Recently, the State Air Resources Control Board has, under the authority of the Clean Air Act, started to address air quality in relation to inhalable particulate matter less than 10 microns (PM-10). Approximately 90 percent of these small particles are considered to be dust. Existing dust control regulations by local agencies, municipal departments, public works department, and public health departments are in place in some regions within California.

Many local agencies require dust control in order to comply with local nuisance laws, opacity laws (visibility impairment) and the requirements of the Clean Air Act. The following are measures that local agencies may have already implemented as requirements for dust control from contractors:

- Construction and Grading Permits: Require provisions for dust control plans.
- Opacity Emission Limits: Enforce compliance with California air pollution control laws.
- Increase Overall Enforcement Activities: Priority given to cases involving citizen complaints.
- Maintain Field Application Records: Require records of dust control measures from contractor;
- Stormwater Pollution Prevention Plan: (SWPPP): Integrate dust control measures into SWPPP.

Dust Control Practices

Dust control BMPs generally stabilize exposed surfaces and minimize activities that suspend or track dust particles. The following table shows dust control practices that can be applied to site conditions that cause dust. For heavily traveled and disturbed areas, wet suppression (watering), chemical dust suppression, gravel asphalt surfacing, temporary gravel construction entrances, equipment wash-out areas, and haul truck covers can be employed as dust control applications. Permanent or temporary vegetation and mulching can be employed for areas of occasional or no construction traffic. Preventive measures would include minimizing surface areas to be disturbed, limiting onsite vehicle traffic to 15 mph, and controlling the number and activity of vehicles on a site at any given time.

SITE CONDITION	DUST CONTROL PRACTICES								
	Permanent Vegetation	Mulching	Wet Suppression (Watering)	Chemical Dust Suppression	Gravel or Asphalt	Silt Fences	Temporary Gravel Construction Entrances/Equipment Wash Down	Haul Truck Covers	Minimize Extent of Disturbed Area
Disturbed Areas not Subject to Traffic	X	X	X	X	X				X
Disturbed Areas Subject to Traffic			X	X	X		X		X
Material Stock Pile Stabilization			X	X		X			X
Demolition			X				X	X	
Clearing/ Excavation			X	X		X			X
Truck Traffic on Unpaved Roads			X	X	X		X	X	
Mud/Dirt Carry Out					X		X		

☐

Additional preventive measures include:

- Schedule construction activities to minimize exposed area (EC-1, Scheduling).
- Quickly stabilize exposed soils using vegetation, mulching, spray-on adhesives, calcium chloride, sprinkling, and stone/gravel layering.
- Identify and stabilize key access points prior to commencement of construction.
- Minimize the impact of dust by anticipating the direction of prevailing winds.
- Direct most construction traffic to stabilized roadways within the project site.
- Water should be applied by means of pressure-type distributors or pipelines equipped with a spray system or hoses and nozzles that will ensure even distribution.
- All distribution equipment should be equipped with a positive means of shutoff.
- Unless water is applied by means of pipelines, at least one mobile unit should be available at all times to apply water or dust palliative to the project.

- If reclaimed waste water is used, the sources and discharge must meet California Department of Health Services water reclamation criteria and the Regional Water Quality Control Board requirements. Non-potable water should not be conveyed in tanks or drain pipes that will be used to convey potable water and there should be no connection between potable and non-potable supplies. Non-potable tanks, pipes, and other conveyances should be marked, "NON-POTABLE WATER - DO NOT DRINK."
- Materials applied as temporary soil stabilizers and soil binders also generally provide wind erosion control benefits.
- Pave or chemically stabilize access points where unpaved traffic surfaces adjoin paved roads.
- Provide covers for haul trucks transporting materials that contribute to dust.
- Provide for wet suppression or chemical stabilization of exposed soils.
- Provide for rapid clean up of sediments deposited on paved roads. Furnish stabilized construction road entrances and vehicle wash down areas.
- Stabilize inactive construction sites using vegetation or chemical stabilization methods.
- Limit the amount of areas disturbed by clearing and earth moving operations by scheduling these activities in phases.

For chemical stabilization, there are many products available for chemically stabilizing gravel roadways and stockpiles. If chemical stabilization is used, the chemicals should not create any adverse effects on stormwater, plant life, or groundwater.

Costs

Installation costs for water and chemical dust suppression are low, but annual costs may be quite high since these measures are effective for only a few hours to a few days.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and at two-week intervals in the non-rainy season to verify continued BMP implementation.
- Check areas protected to ensure coverage.
- Most dust control measures require frequent, often daily, or multiple times per day attention.

References

Best Management Practices and Erosion Control Manual for Construction Sites, Flood Control District of Maricopa County, Arizona, September 1992.

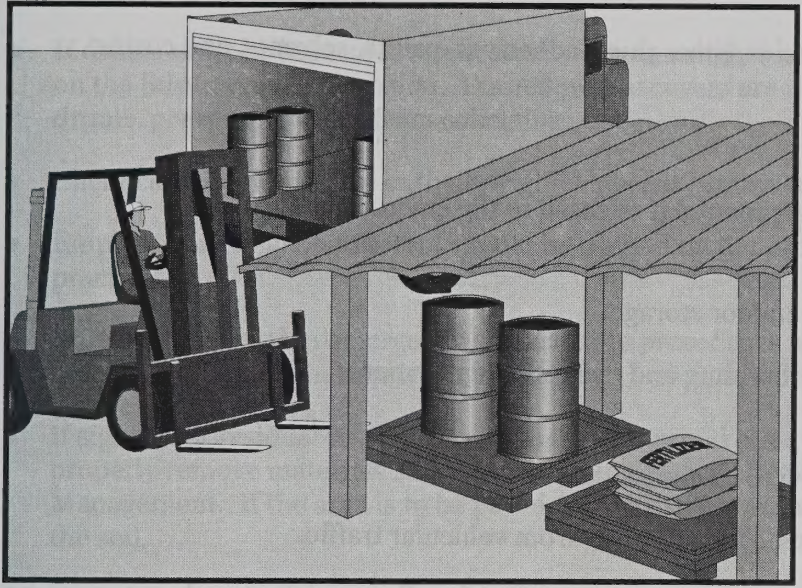
California Air Pollution Control Laws, California Air Resources Board, 1992.

Caltrans, Standard Specifications, Sections 10, "Dust Control"; Section 17, "Watering"; and Section 18, "Dust Palliative".

Prospects for Attaining the State Ambient Air Quality Standards for Suspended Particulate Matter (PM10), Visibility Reducing Particles, Sulfates, Lead, and Hydrogen Sulfide, California Air Resources Board, April 1991.

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Material Delivery and Storage WM-1



Description and Purpose

Prevent, reduce, or eliminate the discharge of pollutants from material delivery and storage to the stormwater system or watercourses by minimizing the storage of hazardous materials onsite, storing materials in a designated area, installing secondary containment, conducting regular inspections, and training employees and subcontractors.

This best management practice covers only material delivery and storage. For other information on materials, see WM-2, Material Use, or WM-4, Spill Prevention and Control. For information on wastes, see the waste management BMPs in this section.

Suitable Applications

These procedures are suitable for use at all construction sites with delivery and storage of the following materials:

- Soil stabilizers and binders
- Pesticides and herbicides
- Fertilizers
- Detergents
- Plaster
- Petroleum products such as fuel, oil, and grease
- Asphalt and concrete components

Objectives

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

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- Hazardous chemicals such as acids, lime, glues, adhesives, paints, solvents, and curing compounds
- Concrete compounds
- Other materials that may be detrimental if released to the environment

Limitations

- Space limitation may preclude indoor storage.
- Storage sheds often must meet building and fire code requirements.

Implementation

The following steps should be taken to minimize risk:

- Temporary storage area should be located away from vehicular traffic.
- Material Safety Data Sheets (MSDS) should be supplied for all materials stored.
- Construction site areas should be designated for material delivery and storage.
- Material delivery and storage areas should be located near the construction entrances, away from waterways, if possible.
  - Avoid transport near drainage paths or waterways.
  - Surround with earth berms. See EC-9, Earth Dikes and Drainage Swales.
  - Place in an area which will be paved.
- Storage of reactive, ignitable, or flammable liquids must comply with the fire codes of your area. Contact the local Fire Marshal to review site materials, quantities, and proposed storage area to determine specific requirements. See the Flammable and Combustible Liquid Code, NFPA30.
- An up to date inventory of materials delivered and stored onsite should be kept.
- Hazardous materials storage onsite should be minimized.
- Hazardous materials should be handled as infrequently as possible.
- During the rainy season, consider storing materials in a covered area. Store materials in secondary containments such as earthen dike, horse trough, or even a children's wading pool for non-reactive materials such as detergents, oil, grease, and paints. Small amounts of material may be secondarily contained in "bus boy" trays or concrete mixing trays.
- Do not store chemicals, drums, or bagged materials directly on the ground. Place these items on a pallet and, when possible, in secondary containment.

- If drums must be kept uncovered, store them at a slight angle to reduce ponding of rainwater on the lids to reduce corrosion. Domed plastic covers are inexpensive and snap to the top of drums, preventing water from collecting.

- Chemicals should be kept in their original labeled containers.

- Employees and subcontractors should be trained on the proper material delivery and storage practices.

- Employees trained in emergency spill cleanup procedures must be present when dangerous materials or liquid chemicals are unloaded.

- If significant residual materials remain on the ground after construction is complete, properly remove materials and any contaminated soil. See WM-7, Contaminated Soil Management. If the area is to be paved, pave as soon as materials are removed to stabilize the soil.

Material Storage Areas and Practices

- Liquids, petroleum products, and substances listed in 40 CFR Parts 110, 117, or 302 should be stored in approved containers and drums and should not be overfilled. Containers and drums should be placed in temporary containment facilities for storage.

- A temporary containment facility should provide for a spill containment volume able to contain precipitation from a 25 year storm event, plus the greater of 10% of the aggregate volume of all containers or 100% of the capacity of the largest container within its boundary, whichever is greater.

- A temporary containment facility should be impervious to the materials stored therein for a minimum contact time of 72 hours.

- A temporary containment facility should be maintained free of accumulated rainwater and spills. In the event of spills or leaks, accumulated rainwater and spills should be collected and placed into drums. These liquids should be handled as a hazardous waste unless testing determines them to be non-hazardous. All collected liquids or non-hazardous liquids should be sent to an approved disposal site.

- Sufficient separation should be provided between stored containers to allow for spill cleanup and emergency response access.

- Incompatible materials, such as chlorine and ammonia, should not be stored in the same temporary containment facility.

- Throughout the rainy season, each temporary containment facility should be covered during non-working days, prior to, and during rain events.

- Materials should be stored in their original containers and the original product labels should be maintained in place in a legible condition. Damaged or otherwise illegible labels should be replaced immediately.

- Bagged and boxed materials should be stored on pallets and should not be allowed to accumulate on the ground. To provide protection from wind and rain throughout the rainy season, bagged and boxed materials should be covered during non-working days and prior to and during rain events.
- Stockpiles should be protected in accordance with WM-3, Stockpile Management.
- Materials should be stored indoors within existing structures or sheds when available.
- Proper storage instructions should be posted at all times in an open and conspicuous location.
- An ample supply of appropriate spill clean up material should be kept near storage areas.
- Also see WM-6, Hazardous Waste Management, for storing of hazardous materials.

Material Delivery Practices

- Keep an accurate, up-to-date inventory of material delivered and stored onsite.
- Arrange for employees trained in emergency spill cleanup procedures to be present when dangerous materials or liquid chemicals are unloaded.

Spill Cleanup

- Contain and clean up any spill immediately.
- Properly remove and dispose of any hazardous materials or contaminated soil if significant residual materials remain on the ground after construction is complete. See WM-7, Contaminated Soil Management.
- See WM-4, Spill Prevention and Control, for spills of chemicals and/or hazardous materials.

Cost

- The largest cost of implementation may be in the construction of a materials storage area that is covered and provides secondary containment.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
- Keep an ample supply of spill cleanup materials near the storage area.
- Keep storage areas clean, well organized, and equipped with ample cleanup supplies as appropriate for the materials being stored.
- Repair or replace perimeter controls, containment structures, covers, and liners as needed to maintain proper function.

References

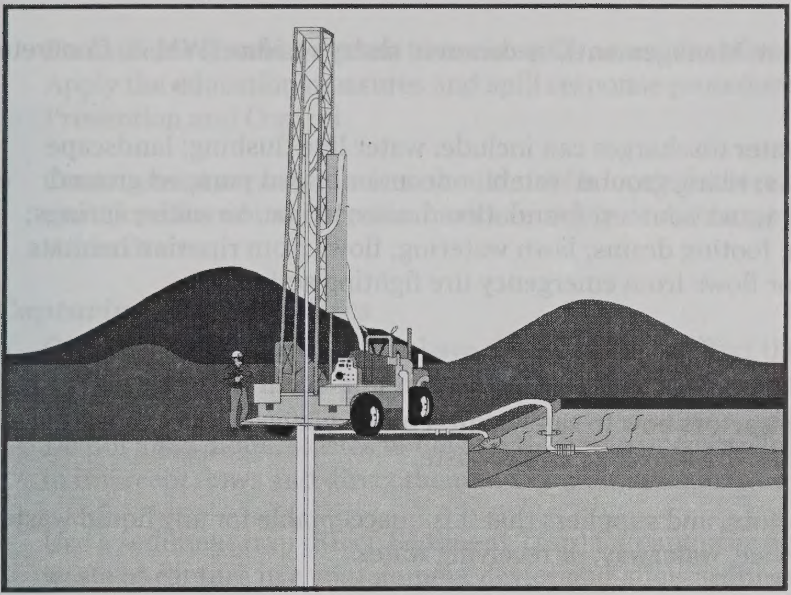
Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance, Working Group Working Paper; USEPA, April 1992.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Liquid Waste Management WM-10



Objectives

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	

Potential Alternatives

None

Description and Purpose

Liquid waste management includes procedures and practices to prevent discharge of pollutants to the storm drain system or to watercourses as a result of the creation, collection, and disposal of non-hazardous liquid wastes.

Suitable Applications

Liquid waste management is applicable to construction projects that generate any of the following non-hazardous by-products, residuals, or wastes:

- Drilling slurries and drilling fluids
- Grease-free and oil-free wastewater and rinse water
- Dredgings
- Other non-stormwater liquid discharges not permitted by separate permits

Limitations

- Disposal of some liquid wastes may be subject to specific laws and regulations or to requirements of other permits secured for the construction project (e.g., NPDES permits, Army Corps permits, Coastal Commission permits, etc.).
- Liquid waste management does not apply to dewatering operations (NS-2 Dewatering Operations), solid waste management (WM-5, Solid Waste Management), hazardous

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wastes (WM-6, Hazardous Waste Management), or concrete slurry residue (WM-8, Concrete Waste Management).

- Typical permitted non-stormwater discharges can include: water line flushing; landscape irrigation; diverted stream flows; rising ground waters; uncontaminated pumped ground water; discharges from potable water sources; foundation drains; irrigation water; springs; water from crawl space pumps; footing drains; lawn watering; flows from riparian habitats and wetlands; and discharges or flows from emergency fire fighting activities.

Implementation

General Practices

- Instruct employees and subcontractors how to safely differentiate between non-hazardous liquid waste and potential or known hazardous liquid waste.

- Instruct employees, subcontractors, and suppliers that it is unacceptable for any liquid waste to enter any storm drainage device, waterway, or receiving water.

- Educate employees and subcontractors on liquid waste generating activities and liquid waste storage and disposal procedures.

- Hold regular meetings to discuss and reinforce disposal procedures (incorporate into regular safety meetings).

- Verify which non-stormwater discharges are permitted by the statewide NPDES permit; different regions might have different requirements not outlined in this permit.

- Apply NS-8, Vehicle and Equipment Cleaning for managing wash water and rinse water from vehicle and equipment cleaning operations.

Containing Liquid Wastes

- Drilling residue and drilling fluids should not be allowed to enter storm drains and watercourses and should be disposed of.

- If an appropriate location is available, drilling residue and drilling fluids that are exempt under Title 23, CCR § 2511(g) may be dried by infiltration and evaporation in a containment facility constructed in conformance with the provisions concerning the Temporary Concrete Washout Facilities detailed in WM-8, Concrete Waste Management.

- Liquid wastes generated as part of an operational procedure, such as water-laden dredged material and drilling mud, should be contained and not allowed to flow into drainage channels or receiving waters prior to treatment.

- Liquid wastes should be contained in a controlled area such as a holding pit, sediment basin, roll-off bin, or portable tank.

- Containment devices must be structurally sound and leak free.

- Containment devices must be of sufficient quantity or volume to completely contain the liquid wastes generated.

- Precautions should be taken to avoid spills or accidental releases of contained liquid wastes. Apply the education measures and spill response procedures outlined in WM-4, Spill Prevention and Control.

- Containment areas or devices should not be located where accidental release of the contained liquid can threaten health or safety or discharge to water bodies, channels, or storm drains.

Capturing Liquid Wastes

- Capture all liquid wastes that have the potential to affect the storm drainage system (such as wash water and rinse water from cleaning walls or pavement), before they run off a surface.

- Do not allow liquid wastes to flow or discharge uncontrolled. Use temporary dikes or berms to intercept flows and direct them to a containment area or device for capture.

- Use a sediment trap (SE-3, Sediment Trap) for capturing and treating sediment laden liquid waste or capture in a containment device and allow sediment to settle.

Disposing of Liquid Wastes

- A typical method to handle liquid waste is to dewater the contained liquid waste, using procedures such as described in NS-2, Dewatering Operations, and SE-2, Sediment Basin, and dispose of resulting solids per WM-5, Solid Waste Management.

- Methods of disposal for some liquid wastes may be prescribed in Water Quality Reports, NPDES permits, Environmental Impact Reports, 401 or 404 permits, and local agency discharge permits, etc. Review the SWPPP to see if disposal methods are identified.

- Liquid wastes, such as from dredged material, may require testing and certification whether it is hazardous or not before a disposal method can be determined.

- For disposal of hazardous waste, see WM-6, Hazardous Waste Management.

- If necessary, further treat liquid wastes prior to disposal. Treatment may include, though is not limited to, sedimentation, filtration, and chemical neutralization.

Costs

Prevention costs for liquid waste management are minimal. Costs increase if cleanup or fines are involved.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.

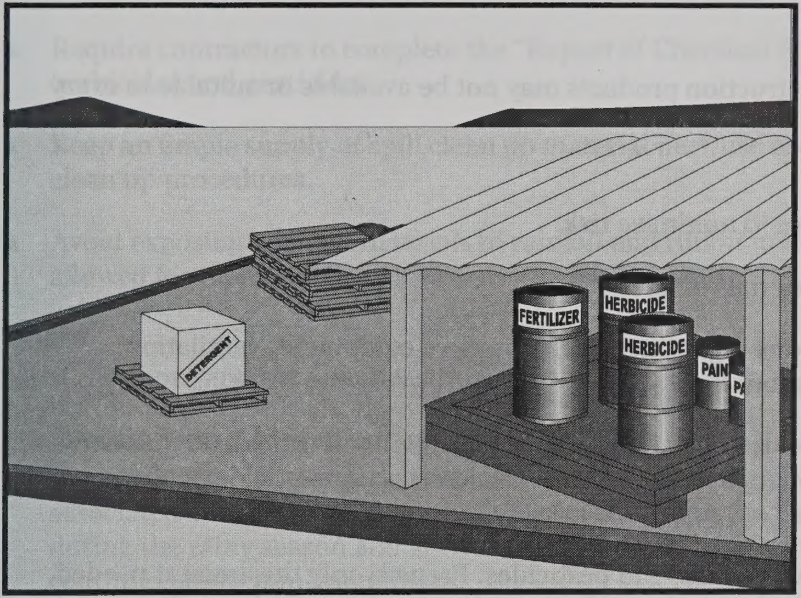
- Inspect BMPs subject to non-stormwater discharge daily while non-stormwater discharges occur.

- Remove deposited solids in containment areas and capturing devices as needed and at the completion of the task. Dispose of any solids as described in WM-5, Solid Waste Management.
- Inspect containment areas and capturing devices and repair as needed.

References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Material Use WM-2



Description and Purpose

Prevent or reduce the discharge of pollutants to the storm drain system or watercourses from material use by using alternative products, minimizing hazardous material use onsite, and training employees and subcontractors.

Suitable Applications

This BMP is suitable for use at all construction projects. These procedures apply when the following materials are used or prepared onsite:

- Pesticides and herbicides
- Fertilizers
- Detergents
- Plaster
- Petroleum products such as fuel, oil, and grease
- Asphalt and other concrete components
- Other hazardous chemicals such as acids, lime, glues, adhesives, paints, solvents, and curing compounds
- Concrete compounds
- Other materials that may be detrimental if released to the environment

Objectives

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

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Limitations

Safer alternative building and construction products may not be available or suitable in every instance.

Implementation

The following steps should be taken to minimize risk:

- Minimize use of hazardous materials onsite.
- Follow manufacturer instructions regarding uses, protective equipment, ventilation, flammability, and mixing of chemicals.
- Train personnel who use pesticides. The California Department of Pesticide Regulation and county agricultural commissioners license pesticide dealers, certify pesticide applicators, and conduct onsite inspections.
- Do not over-apply fertilizers, herbicides, and pesticides. Prepare only the amount needed. Follow the recommended usage instructions. Over-application is expensive and environmentally harmful. Unless on steep slopes, till fertilizers into the soil rather than hydro seeding. Apply surface dressings in several smaller applications, as opposed to one large application, to allow time for infiltration and to avoid excess material being carried offsite by runoff. Do not apply these chemicals just before it rains.
- Train employees and subcontractors in proper material use.
- Supply Material Safety Data Sheets (MSDS) for all materials.
- Dispose of latex paint and paint cans, used brushes, rags, absorbent materials, and drop cloths, when thoroughly dry and are no longer hazardous, with other construction debris.
- Do not remove the original product label; it contains important safety and disposal information. Use the entire product before disposing of the container.
- Mix paint indoors or in a containment area. Never clean paintbrushes or rinse paint containers into a street, gutter, storm drain, or watercourse. Dispose of any paint thinners, residue, and sludge(s) that cannot be recycled, as hazardous waste.
- For water-based paint, clean brushes to the extent practicable, and rinse to a drain leading to a sanitary sewer where permitted, or into a concrete washout pit or temporary sediment trap. For oil-based paints, clean brushes to the extent practicable, and filter and reuse thinners and solvents.
- Use recycled and less hazardous products when practical. Recycle residual paints, solvents, non-treated lumber, and other materials.
- Use materials only where and when needed to complete the construction activity. Use safer alternative materials as much as possible. Reduce or eliminate use of hazardous materials onsite when practical.

- Require contractors to complete the "Report of Chemical Spray Forms" when spraying herbicides and pesticides.

- Keep an ample supply of spill clean up material near use areas. Train employees in spill clean up procedures.

- Avoid exposing applied materials to rainfall and runoff unless sufficient time has been allowed for them to dry.

Costs

All of the above are low cost measures.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and at two–week intervals in the non-rainy season to verify continued BMP implementation.

- Maintenance of this best management practice is minimal.

- Spot check employees and subcontractors throughout the job to ensure appropriate practices are being employed.

References

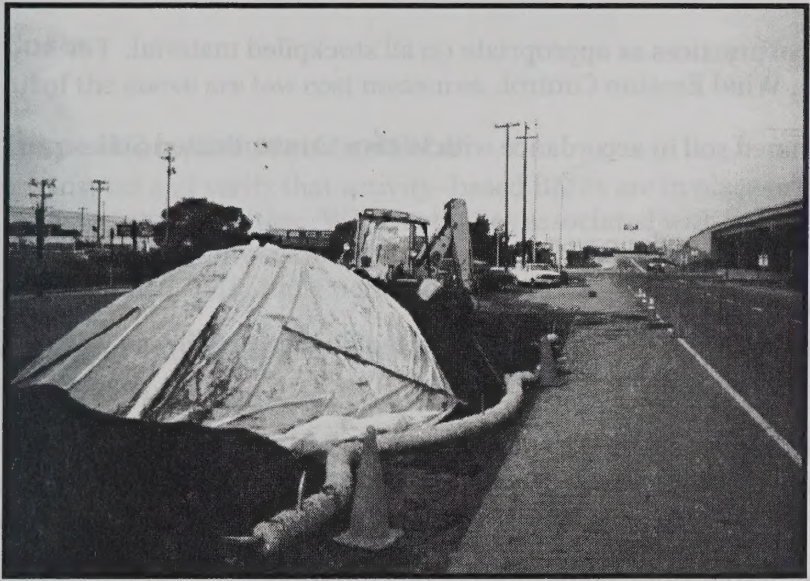
Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance, Working Group Working Paper; USEPA, April 1992.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Stockpile Management WM-3



Objectives

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Stockpile Management procedures and practices are designed to reduce or eliminate air and stormwater pollution from stockpiles of soil, paving materials such as portland cement concrete (PCC) rubble, asphalt concrete (AC), asphalt concrete rubble, aggregate base, aggregate sub base or pre-mixed aggregate, asphalt minder (so called "cold mix" asphalt), and pressure treated wood.

Suitable Applications

Implement in all projects that stockpile soil and other materials.

Limitations

None identified.

Implementation

Protection of stockpiles is a year-round requirement. To properly manage stockpiles:

- Locate stockpiles a minimum of 50 ft away from concentrated flows of stormwater, drainage courses, and inlets.
- Protect all stockpiles from stormwater runon using a temporary perimeter sediment barrier such as berms, dikes, fiber rolls, silt fences, sandbag, gravel bags, or straw bale barriers.

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- Implement wind erosion control practices as appropriate on all stockpiled material. For specific information, see WE-1, Wind Erosion Control.
- Manage stockpiles of contaminated soil in accordance with WM-7, Contaminated Soil Management.
- Place bagged materials on pallets and under cover.

Protection of Non-Active Stockpiles

Non-active stockpiles of the identified materials should be protected further as follows:

Soil stockpiles

- During the rainy season, soil stockpiles should be covered or protected with soil stabilization measures and a temporary perimeter sediment barrier at all times.
- During the non-rainy season, soil stockpiles should be covered or protected with a temporary perimeter sediment barrier prior to the onset of precipitation.

Stockpiles of Portland cement concrete rubble, asphalt concrete, asphalt concrete rubble, aggregate base, or aggregate sub base

- During the rainy season, the stockpiles should be covered or protected with a temporary perimeter sediment barrier at all times.
- During the non-rainy season, the stockpiles should be covered or protected with a temporary perimeter sediment barrier prior to the onset of precipitation.

Stockpiles of "cold mix"

- During the rainy season, cold mix stockpiles should be placed on and covered with plastic or comparable material at all times.
- During the non-rainy season, cold mix stockpiles should be placed on and covered with plastic or comparable material prior to the onset of precipitation.

Stockpiles/Storage of pressure treated wood with copper, chromium, and arsenic or ammonical, copper, zinc, and arsenate

- During the rainy season, treated wood should be covered with plastic or comparable material at all times.
- During the non-rainy season, treated wood should be covered with plastic or comparable material at all times and cold mix stockpiles should be placed on and covered with plastic or comparable material prior to the onset of precipitation.

Protection of Active Stockpiles

Active stockpiles of the identified materials should be protected further as follows:

- All stockpiles should be protected with a temporary linear sediment barrier prior to the onset of precipitation.
- Stockpiles of "cold mix" should be placed on and covered with plastic or comparable material prior to the onset of precipitation.

Costs

All of the above are low cost measures.

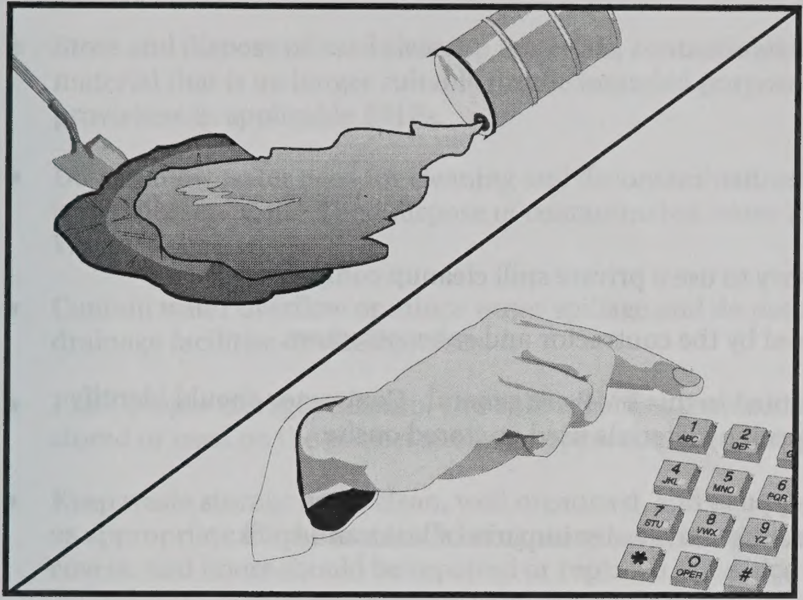
Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation
- Repair and/or replace perimeter controls and covers as needed to keep them functioning properly.

References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Spill Prevention and Control WM-4



Description and Purpose

Prevent or reduce the discharge of pollutants to drainage systems or watercourses from leaks and spills by reducing the chance for spills, stopping the source of spills, containing and cleaning up spills, properly disposing of spill materials, and training employees.

This best management practice covers only spill prevention and control. However, WM-1, Materials Delivery and Storage, and WM-2, Material Use, also contain useful information, particularly on spill prevention. For information on wastes, see the waste management BMPs in this section.

Suitable Applications

This BMP is suitable for all construction projects. Spill control procedures are implemented anytime chemicals or hazardous substances are stored on the construction site, including the following materials:

- Soil stabilizers/binders
- Dust palliatives
- Herbicides
- Growth inhibitors
- Fertilizers
- Deicing/anti-icing chemicals

Objectives

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

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- Fuels
- Lubricants
- Other petroleum distillates

Limitations

- In some cases it may be necessary to use a private spill cleanup company.
- This BMP applies to spills caused by the contractor and subcontractors.
- Procedures and practices presented in this BMP are general. Contractor should identify appropriate practices for the specific materials used or stored onsite

Implementation

The following steps will help reduce the stormwater impacts of leaks and spills:

Education

- Be aware that different materials pollute in different amounts. Make sure that each employee knows what a "significant spill" is for each material they use, and what is the appropriate response for "significant" and "insignificant" spills.
- Educate employees and subcontractors on potential dangers to humans and the environment from spills and leaks.
- Hold regular meetings to discuss and reinforce appropriate disposal procedures (incorporate into regular safety meetings).
- Establish a continuing education program to indoctrinate new employees.
- Have contractor's superintendent or representative oversee and enforce proper spill prevention and control measures.

General Measures

- To the extent that the work can be accomplished safely, spills of oil, petroleum products, substances listed under 40 CFR parts 110,117, and 302, and sanitary and septic wastes should be contained and cleaned up immediately.
- Store hazardous materials and wastes in covered containers and protect from vandalism.
- Place a stockpile of spill cleanup materials where it will be readily accessible.
- Train employees in spill prevention and cleanup.
- Designate responsible individuals to oversee and enforce control measures.
- Spills should be covered and protected from stormwater runon during rainfall to the extent that it doesn't compromise clean up activities.
- Do not bury or wash spills with water.

- Store and dispose of used clean up materials, contaminated materials, and recovered spill material that is no longer suitable for the intended purpose in conformance with the provisions in applicable BMPs.
- Do not allow water used for cleaning and decontamination to enter storm drains or watercourses. Collect and dispose of contaminated water in accordance with WM-10, Liquid Waste Management.
- Contain water overflow or minor water spillage and do not allow it to discharge into drainage facilities or watercourses.
- Place proper storage, cleanup, and spill reporting instructions for hazardous materials stored or used on the project site in an open, conspicuous, and accessible location.
- Keep waste storage areas clean, well organized, and equipped with ample cleanup supplies as appropriate for the materials being stored. Perimeter controls, containment structures, covers, and liners should be repaired or replaced as needed to maintain proper function.

Cleanup

- Clean up leaks and spills immediately.
- Use a rag for small spills on paved surfaces, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be sent to either a certified laundry (rags) or disposed of as hazardous waste.
- Never hose down or bury dry material spills. Clean up as much of the material as possible and dispose of properly. See the waste management BMPs in this section for specific information.

Minor Spills

- Minor spills typically involve small quantities of oil, gasoline, paint, etc. which can be controlled by the first responder at the discovery of the spill.
- Use absorbent materials on small spills rather than hosing down or burying the spill.
- Absorbent materials should be promptly removed and disposed of properly.
- Follow the practice below for a minor spill:
  - Contain the spread of the spill.
  - Recover spilled materials.
  - Clean the contaminated area and properly dispose of contaminated materials.

Semi-Significant Spills

- Semi-significant spills still can be controlled by the first responder along with the aid of other personnel such as laborers and the foreman, etc. This response may require the cessation of all other activities.

- Spills should be cleaned up immediately:
  - Contain spread of the spill.
  - Notify the project foreman immediately.
  - If the spill occurs on paved or impermeable surfaces, clean up using "dry" methods (absorbent materials, cat litter and/or rags). Contain the spill by encircling with absorbent materials and do not let the spill spread widely.
  - If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil.
  - If the spill occurs during rain, cover spill with tarps or other material to prevent contaminating runoff.

Significant/Hazardous Spills

- For significant or hazardous spills that cannot be controlled by personnel in the immediate vicinity, the following steps should be taken:
  - Notify the local emergency response by dialing 911. In addition to 911, the contractor will notify the proper county officials. It is the contractor's responsibility to have all emergency phone numbers at the construction site.
  - Notify the Governor's Office of Emergency Services Warning Center, (916) 845-8911.
  - For spills of federal reportable quantities, in conformance with the requirements in 40 CFR parts 110,119, and 302, the contractor should notify the National Response Center at (800) 424-8802.
  - Notification should first be made by telephone and followed up with a written report.
  - The services of a spills contractor or a Haz-Mat team should be obtained immediately. Construction personnel should not attempt to clean up until the appropriate and qualified staffs have arrived at the job site.
  - Other agencies which may need to be consulted include, but are not limited to, the Fire Department, the Public Works Department, the Coast Guard, the Highway Patrol, the City/County Police Department, Department of Toxic Substances, California Division of Oil and Gas, Cal/OSHA, etc.

Reporting

- Report significant spills to local agencies, such as the Fire Department; they can assist in cleanup.
- Federal regulations require that any significant oil spill into a water body or onto an adjoining shoreline be reported to the National Response Center (NRC) at 800-424-8802 (24 hours).

Use the following measures related to specific activities:

Vehicle and Equipment Maintenance

- If maintenance must occur onsite, use a designated area and a secondary containment, located away from drainage courses, to prevent the runon of stormwater and the runoff of spills.
- Regularly inspect onsite vehicles and equipment for leaks and repair immediately
- Check incoming vehicles and equipment (including delivery trucks, and employee and subcontractor vehicles) for leaking oil and fluids. Do not allow leaking vehicles or equipment onsite.
- Always use secondary containment, such as a drain pan or drop cloth, to catch spills or leaks when removing or changing fluids.
- Place drip pans or absorbent materials under paving equipment when not in use.
- Use absorbent materials on small spills rather than hosing down or burying the spill. Remove the absorbent materials promptly and dispose of properly.
- Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around
- Oil filters disposed of in trashcans or dumpsters can leak oil and pollute stormwater. Place the oil filter in a funnel over a waste oil-recycling drum to drain excess oil before disposal. Oil filters can also be recycled. Ask the oil supplier or recycler about recycling oil filters.
- Store cracked batteries in a non-leaking secondary container. Do this with all cracked batteries even if you think all the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are sure it is not leaking.

Vehicle and Equipment Fueling

- If fueling must occur onsite, use designate areas, located away from drainage courses, to prevent the runon of stormwater and the runoff of spills.
- Discourage "topping off" of fuel tanks.
- Always use secondary containment, such as a drain pan, when fueling to catch spills/ leaks.

Costs

Prevention of leaks and spills is inexpensive. Treatment and/ or disposal of contaminated soil or water can be quite expensive.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect BMPs subject to non-stormwater discharge daily while non-stormwater discharges occur.

- Keep ample supplies of spill control and cleanup materials onsite, near storage, unloading, and maintenance areas.
- Update your spill prevention and control plan and stock cleanup materials as changes occur in the types of chemicals onsite.

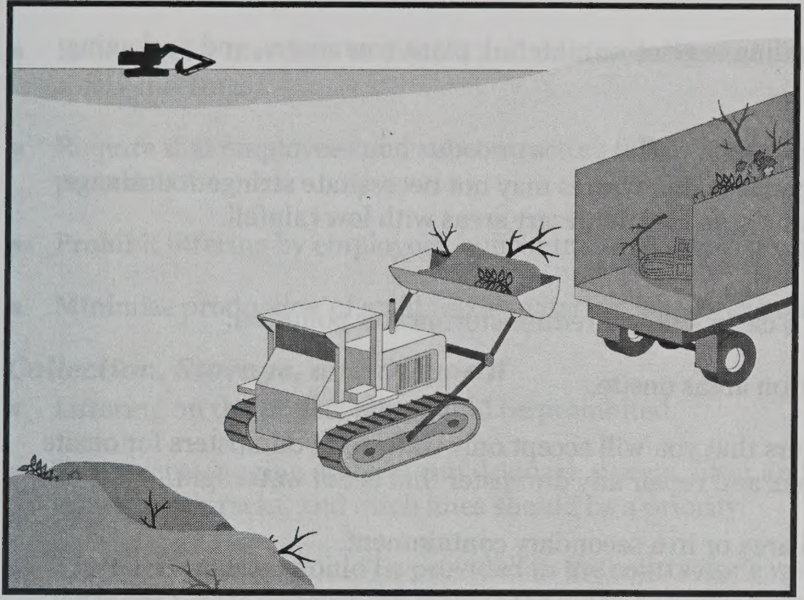
References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Solid Waste Management WM-5



Objectives

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Solid waste management procedures and practices are designed to prevent or reduce the discharge of pollutants to stormwater from solid or construction waste by providing designated waste collection areas and containers, arranging for regular disposal, and training employees and subcontractors.

Suitable Applications

This BMP is suitable for construction sites where the following wastes are generated or stored:

- Solid waste generated from trees and shrubs removed during land clearing, demolition of existing structures (rubble), and building construction
- Packaging materials including wood, paper, and plastic
- Scrap or surplus building materials including scrap metals, rubber, plastic, glass pieces and masonry products
- Domestic wastes including food containers such as beverage cans, coffee cups, paper bags, plastic wrappers, and cigarettes
- Construction wastes including brick, mortar, timber, steel and metal scraps, pipe and electrical cuttings, non-hazardous equipment parts, styrofoam and other materials used to transport and package construction materials

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- Highway planting wastes, including vegetative material, plant containers, and packaging materials

Limitations

Temporary stockpiling of certain construction wastes may not necessitate stringent drainage related controls during the non-rainy season or in desert areas with low rainfall.

Implementation

The following steps will help keep a clean site and reduce stormwater pollution:

- Select designated waste collection areas onsite.
- Inform trash-hauling contractors that you will accept only watertight dumpsters for onsite use. Inspect dumpsters for leaks and repair any dumpster that is not watertight.
- Locate containers in a covered area or in a secondary containment.
- Provide an adequate number of containers with lids or covers that can be placed over the container to keep rain out or to prevent loss of wastes when it is windy.
- Plan for additional containers and more frequent pickup during the demolition phase of construction.
- Collect site trash daily, especially during rainy and windy conditions.
- Remove this solid waste promptly since erosion and sediment control devices tend to collect litter.
- Make sure that toxic liquid wastes (used oils, solvents, and paints) and chemicals (acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for construction debris.
- Do not hose out dumpsters on the construction site. Leave dumpster cleaning to the trash hauling contractor.
- Arrange for regular waste collection before containers overflow.
- Clean up immediately if a container does spill.
- Make sure that construction waste is collected, removed, and disposed of only at authorized disposal areas.

Education

- Have the contractor's superintendent or representative oversee and enforce proper solid waste management procedures and practices.
- Instruct employees and subcontractors on identification of solid waste and hazardous waste.
- Educate employees and subcontractors on solid waste storage and disposal procedures.

- Hold regular meetings to discuss and reinforce disposal procedures (incorporate into regular safety meetings).
- Require that employees and subcontractors follow solid waste handling and storage procedures.
- Prohibit littering by employees, subcontractors, and visitors.
- Minimize production of solid waste materials wherever possible.

Collection, Storage, and Disposal

- Littering on the project site should be prohibited.
- To prevent clogging of the storm drainage system, litter and debris removal from drainage grates, trash racks, and ditch lines should be a priority.
- Trash receptacles should be provided in the contractor's yard, field trailer areas, and at locations where workers congregate for lunch and break periods.
- Litter from work areas within the construction limits of the project site should be collected and placed in watertight dumpsters at least weekly, regardless of whether the litter was generated by the contractor, the public, or others. Collected litter and debris should not be placed in or next to drain inlets, stormwater drainage systems, or watercourses.
- Dumpsters of sufficient size and number should be provided to contain the solid waste generated by the project.
- Full dumpsters should be removed from the project site and the contents should be disposed of by the trash hauling contractor.
- Construction debris and waste should be removed from the site biweekly or more frequently as needed.
- Construction material visible to the public should be stored or stacked in an orderly manner.
- Stormwater runon should be prevented from contacting stored solid waste through the use of berms, dikes, or other temporary diversion structures or through the use of measures to elevate waste from site surfaces.
- Solid waste storage areas should be located at least 50 ft from drainage facilities and watercourses and should not be located in areas prone to flooding or ponding.
- Except during fair weather, construction and highway planting waste not stored in watertight dumpsters should be securely covered from wind and rain by covering the waste with tarps or plastic.
- Segregate potentially hazardous waste from non-hazardous construction site waste.
- Make sure that toxic liquid wastes (used oils, solvents, and paints) and chemicals (acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for construction debris.

- For disposal of hazardous waste, see WM-6, Hazardous Waste Management. Have hazardous waste hauled to an appropriate disposal and/or recycling facility.

- Salvage or recycle useful vegetation debris, packaging and surplus building materials when practical. For example, trees and shrubs from land clearing can be used as a brush barrier, or converted into wood chips, then used as mulch on graded areas. Wood pallets, cardboard boxes, and construction scraps can also be recycled.

Costs

All of the above are low cost measures.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.

- Inspect BMPs subject to non-stormwater discharge daily while non-stormwater discharges occur

- Inspect construction waste area regularly.

- Arrange for regular waste collection.

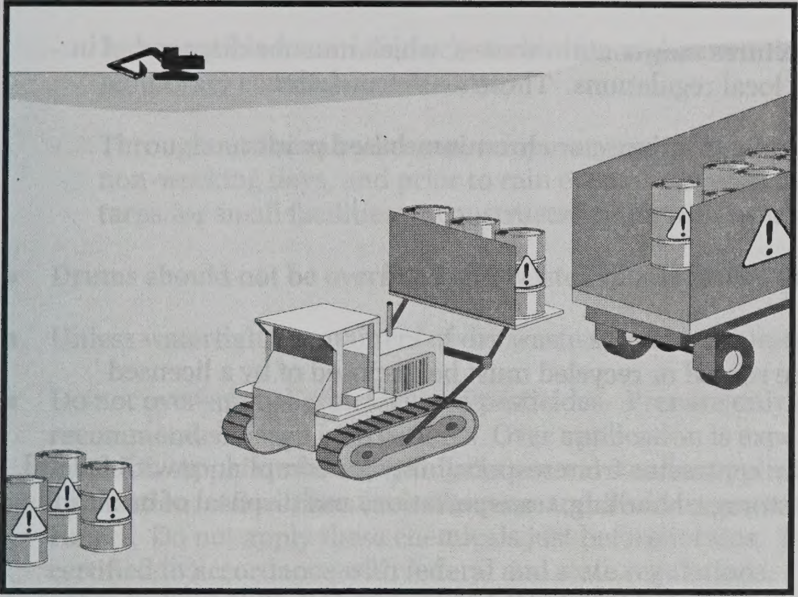
References

Processes, Procedures and Methods to Control Pollution Resulting from All Construction Activity, 430/9-73-007, USEPA, 1973.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Hazardous Waste Management WM-6



Description and Purpose

Prevent or reduce the discharge of pollutants to stormwater from hazardous waste through proper material use, waste disposal, and training of employees and subcontractors.

Suitable Applications

This best management practice (BMP) applies to all construction projects. Hazardous waste management practices are implemented on construction projects that generate waste from the use of:

- Petroleum Products
- Concrete Curing Compounds
- Palliatives
- Septic Wastes
- Stains
- Wood Preservatives
- Asphalt Products
- Pesticides
- Acids
- Paints
- Solvents
- Roofing Tar
- Any materials deemed a hazardous waste in California, Title 22 Division 4.5, or listed in 40 CFR Parts 110, 117, 261, or 302

Objectives

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	☑
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

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In addition, sites with existing structures may contain wastes, which must be disposed of in accordance with federal, state, and local regulations. These wastes include:

- Sandblasting grit mixed with lead-, cadmium-, or chromium-based paints
- Asbestos
- PCBs (particularly in older transformers)

Limitations

- Hazardous waste that cannot be reused or recycled must be disposed of by a licensed hazardous waste hauler.
- Nothing in this BMP relieves the contractor from responsibility for compliance with federal, state, and local laws regarding storage, handling, transportation, and disposal of hazardous wastes.
- This BMP does not cover aerially deposited lead (ADL) soils. For ADL soils refer to WM-7, Contaminated Soil Management.

Implementation

The following steps will help reduce stormwater pollution from hazardous wastes:

Material Use

- Wastes should be stored in sealed containers constructed of a suitable material and should be labeled as required by Title 22 CCR, Division 4.5 and 49 CFR Parts 172, 173, 178, and 179.
- All hazardous waste should be stored, transported, and disposed as required in Title 22 CCR, Division 4.5 and 49 CFR 261-263.
- Waste containers should be stored in temporary containment facilities that should comply with the following requirements:
  - Temporary containment facility should provide for a spill containment volume equal to 1.5 times the volume of all containers able to contain precipitation from a 25 year storm event, plus the greater of 10% of the aggregate volume of all containers or 100% of the capacity of the largest tank within its boundary, whichever is greater.
  - Temporary containment facility should be impervious to the materials stored there for a minimum contact time of 72 hours.
  - Temporary containment facilities should be maintained free of accumulated rainwater and spills. In the event of spills or leaks, accumulated rainwater and spills should be placed into drums after each rainfall. These liquids should be handled as a hazardous waste unless testing determines them to be non-hazardous. Non-hazardous liquids should be sent to an approved disposal site.
  - Sufficient separation should be provided between stored containers to allow for spill cleanup and emergency response access.

  - Incompatible materials, such as chlorine and ammonia, should not be stored in the same temporary containment facility.

  - Throughout the rainy season, temporary containment facilities should be covered during non-working days, and prior to rain events. Covered facilities may include use of plastic tarps for small facilities or constructed roofs with overhangs.

- Drums should not be overfilled and wastes should not be mixed.

- Unless watertight, containers of dry waste should be stored on pallets.

- Do not over-apply herbicides and pesticides. Prepare only the amount needed. Follow the recommended usage instructions. Over application is expensive and environmentally harmful. Apply surface dressings in several smaller applications, as opposed to one large application. Allow time for infiltration and avoid excess material being carried offsite by runoff. Do not apply these chemicals just before it rains. People applying pesticides must be certified in accordance with federal and state regulations.

- Paint brushes and equipment for water and oil based paints should be cleaned within a contained area and should not be allowed to contaminate site soils, watercourses, or drainage systems. Waste paints, thinners, solvents, residues, and sludges that cannot be recycled or reused should be disposed of as hazardous waste. When thoroughly dry, latex paint and paint cans, used brushes, rags, absorbent materials, and drop cloths should be disposed of as solid waste.

- Do not clean out brushes or rinse paint containers into the dirt, street, gutter, storm drain, or stream. "Paint out" brushes as much as possible. Rinse water-based paints to the sanitary sewer. Filter and reuse thinners and solvents. Dispose of excess oil-based paints and sludge as hazardous waste.

- The following actions should be taken with respect to temporary contaminant:
  - Ensure that adequate hazardous waste storage volume is available.
  - Ensure that hazardous waste collection containers are conveniently located.
  - Designate hazardous waste storage areas onsite away from storm drains or watercourses and away from moving vehicles and equipment to prevent accidental spills.
  - Minimize production or generation of hazardous materials and hazardous waste on the job site.
  - Use containment berms in fueling and maintenance areas and where the potential for spills is high.
  - Segregate potentially hazardous waste from non-hazardous construction site debris.
  - Keep liquid or semi-liquid hazardous waste in appropriate containers (closed drums or similar) and under cover.

  - Clearly label all hazardous waste containers with the waste being stored and the date of accumulation.
  - Place hazardous waste containers in secondary containment.
  - Do not allow potentially hazardous waste materials to accumulate on the ground.
  - Do not mix wastes.
  - Use all of the product before disposing of the container.
  - Do not remove the original product label; it contains important safety and disposal information.

Waste Recycling Disposal

- Select designated hazardous waste collection areas onsite.
- Hazardous materials and wastes should be stored in covered containers and protected from vandalism.
- Place hazardous waste containers in secondary containment.
- Do not mix wastes, this can cause chemical reactions, making recycling impossible and complicating disposal.
- Recycle any useful materials such as used oil or water-based paint.
- Make sure that toxic liquid wastes (used oils, solvents, and paints) and chemicals (acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for construction debris.
- Arrange for regular waste collection before containers overflow.
- Make sure that hazardous waste (e.g., excess oil-based paint and sludge) is collected, removed, and disposed of only at authorized disposal areas.

Disposal Procedures

- Waste should be disposed of by a licensed hazardous waste transporter at an authorized and licensed disposal facility or recycling facility utilizing properly completed Uniform Hazardous Waste Manifest forms.
- A Department of Health Services certified laboratory should sample waste to determine the appropriate disposal facility.
- Properly dispose of rainwater in secondary containment that may have mixed with hazardous waste.
- Attention is directed to "Hazardous Material", "Contaminated Material", and "Aerially Deposited Lead" of the contract documents regarding the handling and disposal of hazardous materials.

Education

- Educate employees and subcontractors on hazardous waste storage and disposal procedures.
- Educate employees and subcontractors on potential dangers to humans and the environment from hazardous wastes.
- Instruct employees and subcontractors on safety procedures for common construction site hazardous wastes.
- Instruct employees and subcontractors in identification of hazardous and solid waste.
- Hold regular meetings to discuss and reinforce hazardous waste management procedures (incorporate into regular safety meetings).
- The contractor's superintendent or representative should oversee and enforce proper hazardous waste management procedures and practices.
- Make sure that hazardous waste is collected, removed, and disposed of only at authorized disposal areas.
- Warning signs should be placed in areas recently treated with chemicals.
- Place a stockpile of spill cleanup materials where it will be readily accessible.
- If a container does spill, clean up immediately.

Costs

All of the above are low cost measures.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect BMPs subject to non-stormwater discharge daily while non-stormwater discharges occur
- Hazardous waste should be regularly collected.
- A foreman or construction supervisor should monitor onsite hazardous waste storage and disposal procedures.
- Waste storage areas should be kept clean, well organized, and equipped with ample cleanup supplies as appropriate for the materials being stored.
- Perimeter controls, containment structures, covers, and liners should be repaired or replaced as needed to maintain proper function.
- Hazardous spills should be cleaned up and reported in conformance with the applicable Material Safety Data Sheet (MSDS) and the instructions posted at the project site.

- The National Response Center, at (800) 424-8802, should be notified of spills of federal reportable quantities in conformance with the requirements in 40 CFR parts 110, 117, and 302. Also notify the Governors Office of Emergency Services Warning Center at (916) 845-8911.

- A copy of the hazardous waste manifests should be provided.

References

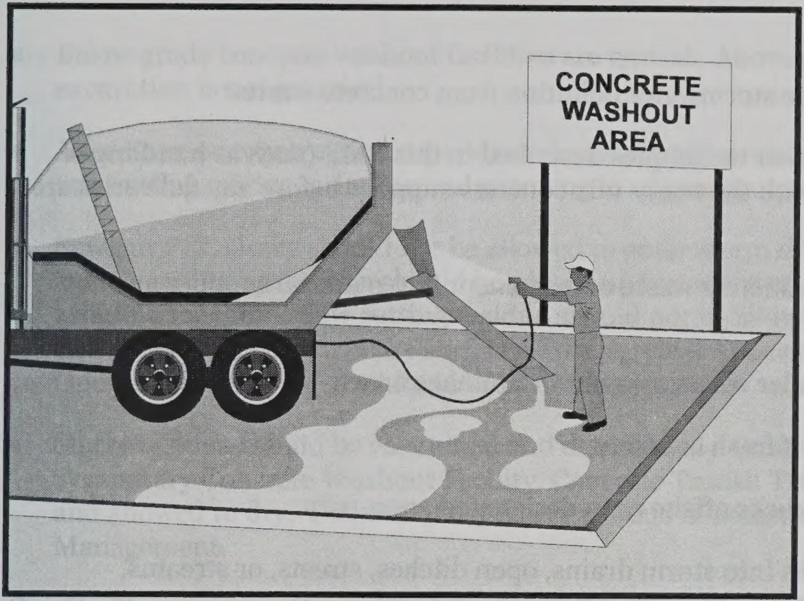
Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Processes, Procedures and Methods to Control Pollution Resulting from All Construction Activity, 430/9-73-007, USEPA, 1973.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Concrete Waste Management



Objectives

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	☑
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

Prevent or reduce the discharge of pollutants to stormwater from concrete waste by conducting washout offsite, performing onsite washout in a designated area, and training employee and subcontractors.

Suitable Applications

Concrete waste management procedures and practices are implemented on construction projects where:

- Concrete is used as a construction material or where concrete dust and debris result form demolition activities
- Slurries containing portland cement concrete (PCC) or asphalt concrete (AC) are generated, such as from saw cutting, coring, grinding, grooving, and hydro-concrete demolition
- Concrete trucks and other concrete-coated equipment are washed onsite
- Mortar-mixing stations exist
- See also NS-8, Vehicle and Equipment Cleaning

Limitations

- Offsite washout of concrete wastes may not always be possible.

Implementation

The following steps will help reduce stormwater pollution from concrete wastes:

- Discuss the concrete management techniques described in this BMP (such as handling of concrete waste and washout) with the ready-mix concrete supplier before any deliveries are made.
- Incorporate requirements for concrete waste management into material supplier and subcontractor agreements.
- Store dry and wet materials under cover, away from drainage areas.
- Avoid mixing excess amounts of fresh concrete.
- Perform washout of concrete trucks offsite or in designated areas only.
- Do not wash out concrete trucks into storm drains, open ditches, streets, or streams.
- Do not allow excess concrete to be dumped onsite, except in designated areas.
- For onsite washout:
  - Locate washout area at least 50 feet from storm drains, open ditches, or water bodies. Do not allow runoff from this area by constructing a temporary pit or bermed area large enough for liquid and solid waste.
  - Wash out wastes into the temporary pit where the concrete can set, be broken up, and then disposed properly.
- Avoid creating runoff by draining water to a bermed or level area when washing concrete to remove fine particles and expose the aggregate.
- Do not wash sweepings from exposed aggregate concrete into the street or storm drain. Collect and return sweepings to aggregate base stockpile or dispose in the trash.

Education

- Educate employees, subcontractors, and suppliers on the concrete waste management techniques described herein.
- Arrange for contractor's superintendent or representative to oversee and enforce concrete waste management procedures.

Concrete Slurry Wastes

- PCC and AC waste should not be allowed to enter storm drains or watercourses.
- PCC and AC waste should be collected and disposed of or placed in a temporary concrete washout facility.
- A sign should be installed adjacent to each temporary concrete washout facility to inform concrete equipment operators to utilize the proper facilities.

- Below grade concrete washout facilities are typical. Above grade facilities are used if excavation is not practical.

- A foreman or construction supervisor should monitor onsite concrete working tasks, such as saw cutting, coring, grinding and grooving to ensure proper methods are implemented.

- Saw-cut PCC slurry should not be allowed to enter storm drains or watercourses. Residue from grinding operations should be picked up by means of a vacuum attachment to the grinding machine. Saw cutting residue should not be allowed to flow across the pavement and should not be left on the surface of the pavement. See also NS-3, Paving and Grinding Operations; and WM-10, Liquid Waste Management.

- Slurry residue should be vacuumed and disposed in a temporary pit (as described in OnSite Temporary Concrete Washout Facility, Concrete Transit Truck Washout Procedures, below) and allowed to dry. Dispose of dry slurry residue in accordance with WM-5, Solid Waste Management.

Onsite Temporary Concrete Washout Facility, Transit Truck Washout Procedures

- Temporary concrete washout facilities should be located a minimum of 50 ft from storm drain inlets, open drainage facilities, and watercourses. Each facility should be located away from construction traffic or access areas to prevent disturbance or tracking.

- A sign should be installed adjacent to each washout facility to inform concrete equipment operators to utilize the proper facilities.

- Temporary concrete washout facilities should be constructed above grade or below grade at the option of the contractor. Temporary concrete washout facilities should be constructed and maintained in sufficient quantity and size to contain all liquid and concrete waste generated by washout operations.

- Temporary washout facilities should have a temporary pit or bermed areas of sufficient volume to completely contain all liquid and waste concrete materials generated during washout procedures.

- Washout of concrete trucks should be performed in designated areas only.

- Only concrete from mixer truck chutes should be washed into concrete wash out.

- Concrete washout from concrete pumper bins can be washed into concrete pumper trucks and discharged into designated washout area or properly disposed of offsite.

- Once concrete wastes are washed into the designated area and allowed to harden, the concrete should be broken up, removed, and disposed of per WM-5, Solid Waste Management. Dispose of hardened concrete on a regular basis.

- Temporary Concrete Washout Facility (Type Above Grade)
    - Temporary concrete washout facility (type above grade) should be constructed as shown on the details at the end of this BMP, with a recommended minimum length and

  - minimum width of 10 ft, but with sufficient quantity and volume to contain all liquid and concrete waste generated by washout operations.

  - Straw bales, wood stakes, and sandbag materials should conform to the provisions in SE-9, Straw Bale Barrier.

  - Plastic lining material should be a minimum of 10 mil in polyethylene sheeting and should be free of holes, tears, or other defects that compromise the impermeability of the material.

- Temporary Concrete Washout Facility (Type Below Grade)

  - Temporary concrete washout facilities (type below grade) should be constructed as shown on the details at the end of this BMP, with a recommended minimum length and minimum width of 10 ft. The quantity and volume should be sufficient to contain all liquid and concrete waste generated by washout operations.

  - Lath and flagging should be commercial type.

  - Plastic lining material should be a minimum of 10 mil polyethylene sheeting and should be free of holes, tears, or other defects that compromise the impermeability of the material.

Removal of Temporary Concrete Washout Facilities

- When temporary concrete washout facilities are no longer required for the work, the hardened concrete should be removed and disposed of. Materials used to construct temporary concrete washout facilities should be removed from the site of the work and disposed of.

- Holes, depressions or other ground disturbance caused by the removal of the temporary concrete washout facilities should be backfilled and repaired.

Costs

All of the above are low cost measures.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.

- Temporary concrete washout facilities should be maintained to provide adequate holding capacity with a minimum freeboard of 4 in. for above grade facilities and 12 in. for below grade facilities. Maintaining temporary concrete washout facilities should include removing and disposing of hardened concrete and returning the facilities to a functional condition. Hardened concrete materials should be removed and disposed of.

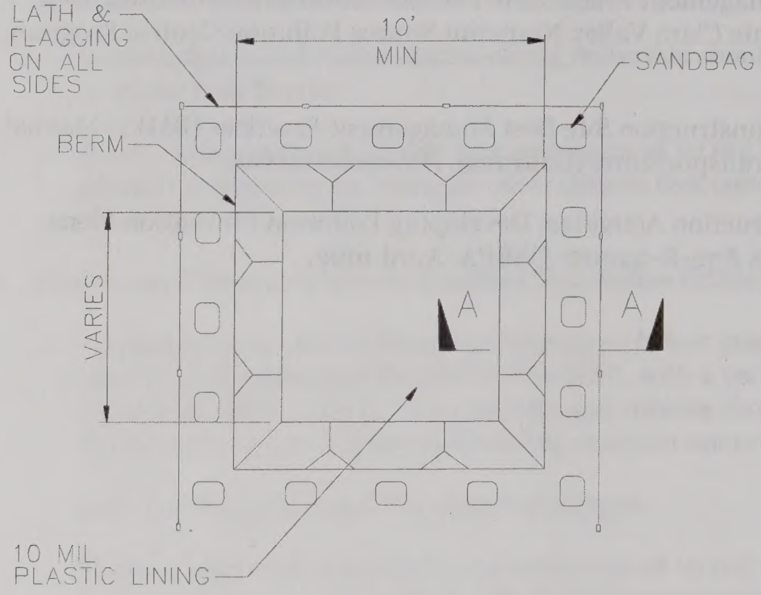
- Washout facilities must be cleaned, or new facilities must be constructed and ready for use once the washout is 75% full.

References

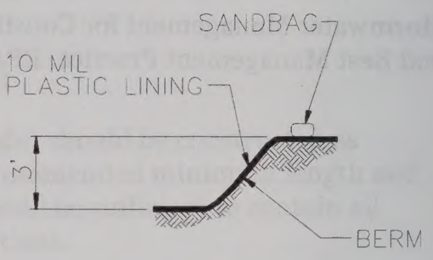
Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

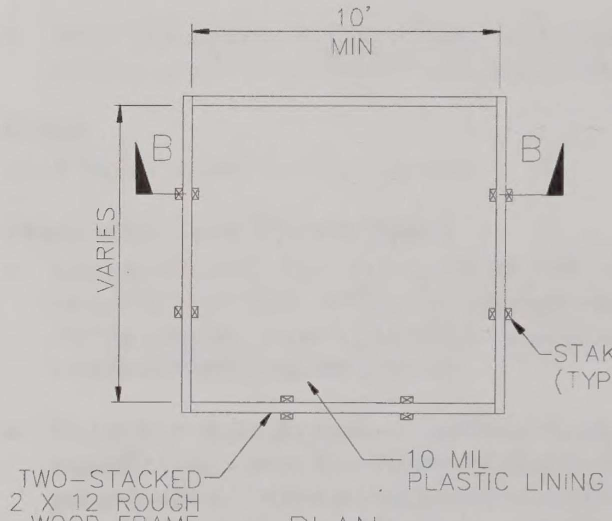
Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.



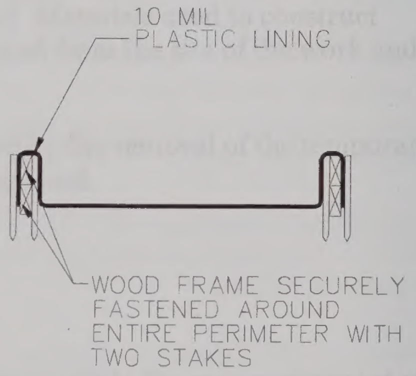
PLAN
NOT TO SCALE
TYPE "BELOW GRADE"



SECTION A–A
NOT TO SCALE



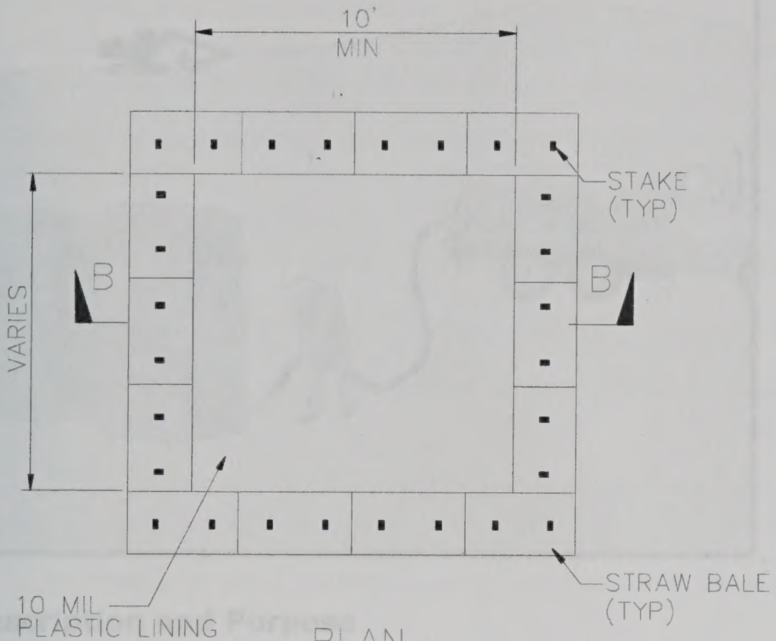
PLAN
NOT TO SCALE
TYPE "ABOVE GRADE"


10 MIL PLASTIC LINING
WOOD FRAME SECURELY FASTENED AROUND ENTIRE PERIMETER WITH TWO STAKES

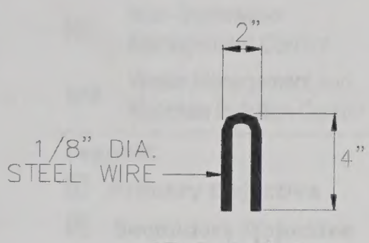
SECTION B–B
NOT TO SCALE

NOTES

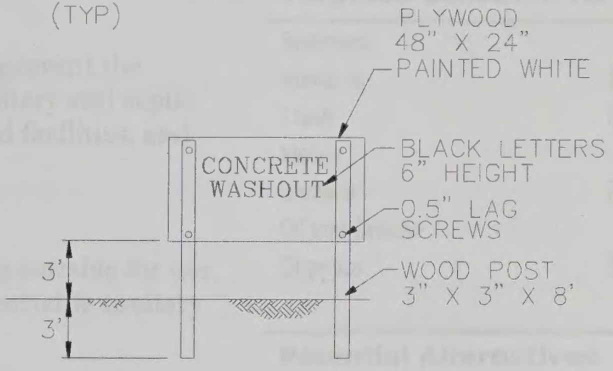
1. ACTUAL LAYOUT DETERMINED IN FIELD.
2. THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30 FT. OF THE TEMPORARY CONCRETE WASHOUT FACILITY.



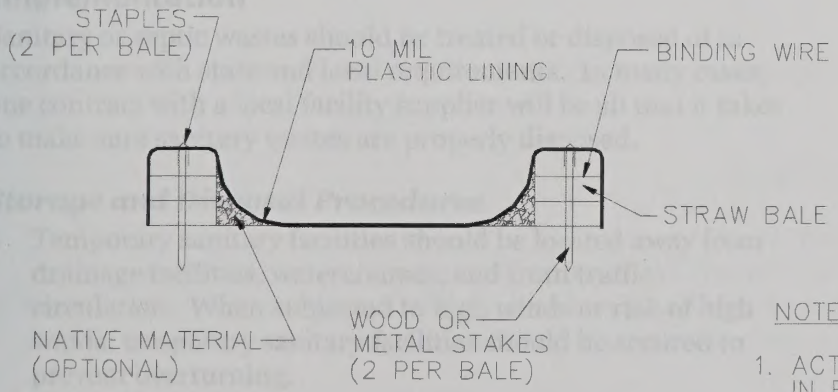
PLAN
NOT TO SCALE
TYPE "ABOVE GRADE" WITH STRAW BALES



STAPLE DETAIL



CONCRETE WASHOUT
SIGN DETAIL
(OR EQUIVALENT)

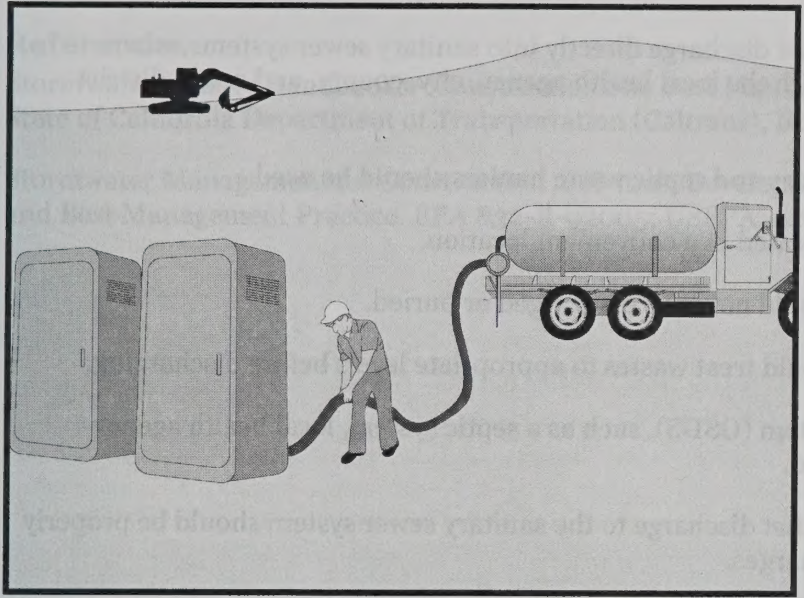


SECTION B-B
NOT TO SCALE

NOTES

1. ACTUAL LAYOUT DETERMINED IN FIELD.
2. THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30 FT. OF THE TEMPORARY CONCRETE WASHOUT FACILITY.

Sanitary/Septic Waste Management WM-9



Objectives

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	
Nutrients	☑
Trash	☑
Metals	
Bacteria	☑
Oil and Grease	
Organics	☑

Potential Alternatives

None

Description and Purpose

Proper sanitary and septic waste management prevent the discharge of pollutants to stormwater from sanitary and septic waste by providing convenient, well-maintained facilities, and arranging for regular service and disposal.

Suitable Applications

Sanitary septic waste management practices are suitable for use at all construction sites that use temporary or portable sanitary and septic waste systems.

Limitations

None identified.

Implementation

Sanitary or septic wastes should be treated or disposed of in accordance with state and local requirements. In many cases, one contract with a local facility supplier will be all that it takes to make sure sanitary wastes are properly disposed.

Storage and Disposal Procedures

- Temporary sanitary facilities should be located away from drainage facilities, watercourses, and from traffic circulation. When subjected to high winds or risk of high winds, temporary sanitary facilities should be secured to prevent overturning.
- Wastewater should not be discharged or buried within the project site.

- Sanitary and septic systems that discharge directly into sanitary sewer systems, where permissible, should comply with the local health agency, city, county, and sewer district requirements.

- Only reputable, licensed sanitary and septic waste haulers should be used.

- Sanitary facilities should be located in a convenient location.

- Untreated raw wastewater should never be discharged or buried.

- Temporary septic systems should treat wastes to appropriate levels before discharging.

- If using an onsite disposal system (OSDS), such as a septic system, local health agency requirements must be followed.

- Temporary sanitary facilities that discharge to the sanitary sewer system should be properly connected to avoid illicit discharges.

- Sanitary and septic facilities should be maintained in good working order by a licensed service.

- Regular waste collection by a licensed hauler should be arranged before facilities overflow.

Education

- Educate employees, subcontractors, and suppliers on sanitary and septic waste storage and disposal procedures.

- Educate employees, subcontractors, and suppliers of potential dangers to humans and the environment from sanitary and septic wastes.

- Instruct employees, subcontractors, and suppliers in identification of sanitary and septic waste.

- Hold regular meetings to discuss and reinforce disposal procedures (incorporate into regular safety meetings).

- Establish a continuing education program to indoctrinate new employees.

Costs

All of the above are low cost measures.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.

- Arrange for regular waste collection.

- If high winds are expected, portable sanitary facilities must be secured with spikes or weighed down to prevent over turning.

References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Attachment C

BMP Checklist

DRAFT

CONSTRUCTION SITE BMP CHECKLIST

The BMPs listed here should be considered for every project. Those BMPs that are not included in the SWPPP must be checked as "Not Used" with a brief statement describing why it is not being used.

EROSION CONTROL BMPs

BMP No.	BMP	CHECK IF USED	CHECK IF NOT USED	IF NOT USED, STATE REASON
EC-1	Scheduling	X		
EC-2	Preservation of Existing Vegetation	X		
EC-3	Hydraulic Mulch	X		
EC-4	Hydroseeding	X		
EC-5	Soil Binders	X		
EC-6	Straw Mulch		X	Sandy soils limit effectiveness of crimping
EC-7	Geotextiles & Mats	X		
EC-8	Wood Mulching		X	Not suitable for concentrated flow and need to remove post construction
EC-9	Earth Dikes & Drainage Swales		X	Soils not conducive for dike construction and stability
EC-10	Velocity Dissipation Devices		X	No outlets / stormwater infrastructure
EC-11	Slope Drains		X	No steep slopes / cut and fill areas w/in project area
EC-12	Streambank Stabilization		X	No defined stream channel work or riparian areas
EC-13	Polyacrylamide		X	Do not want to increase potential of non-visible pollutants

CONSTRUCTION SITE BMPs CONSIDERATION CHECKLIST

The BMPs listed here should be considered for every project. Those BMPs that are not included in the SWPPP must be checked as "Not Used" with a brief statement describing why it is not being used.

DRAFT

BMP No.	BMP	CHECK IF USED	CHECK IF NOT USED	IF NOT USED, STATE REASON
SEDIMENT CONTROL BMPs				
SE-1	Silt Fence	X		
SE-2	Sediment Basin		X	Arid environment and minimal or sporadic disturbed areas
SE-3	Sediment Trap		X	Watershed exceeds 5 acres
SE-4	Check Dam	X		
SE-5	Fiber Rolls	X		
SE-6	Gravel Bag Berm		X	Silt fence and fiber logs used instead
SE-7	Street Sweeping and Vacuuming		X	No paved surfaces
SE-8	Sand Bag Barrier		X	Silt fence and fiber logs used instead
SE-9	Straw Bale Barrier		X	Silt fence and fiber logs used instead
SE-10	Storm Drain Inlet Protection		X	No stormwater inlets within or adjacent to project area
SE-11	Chemical Treatment		X	Arid Environment
WIND EROSION CONTROL BMPs				
WE-1	Wind Erosion Control	X		
TRACKING CONTROL BMPs				
TR-1	Stabilized Construction Entrance/Exit	X		
TR-2	Stabilized Construction Roadway	X		
TR-3	Entrance/Outlet Tire Wash		X	Arid Environment / Not applicable to project

CONSTRUCTION SITE BMPs CONSIDERATION CHECKLIST

The BMPs listed here should be considered for every project. Those BMPs that are not included in the SWPPP must be checked as "Not Used" with a brief statement describing why it is not being used.

NON-STORM WATER MANAGEMENT BMPs

BMP No.	BMP	CHECK IF USED	CHECK IF NOT USED	IF NOT USED, STATE REASON
NS-1	Water Conservation Practices	X		
NS-2	Dewatering Operations		X	Arid Environment
NS-3	Paving and Grinding Operations		X	No paving / grinding activity planned
NS-4	Temporary Stream Crossing		X	No stream crossings anticipated
NS-5	Clear Water Diversion		X	No diversion needed / Not applicable to project
NS-6	Illicit Connection/ Discharge	X		
NS-7	Potable Water/Irrigation		X	No water utilities or irrigation planned
NS-8	Vehicle and Equipment Cleaning		X	Cleaning will take place off site
NS-9	Vehicle and Equipment Fueling	X		
NS-10	Vehicle and Equipment Maintenance	X		
NS-11	Pile Driving Operations		X	Pile driving operations not near water or ground water
NS-12	Concrete Curing	X		
NS-13	Concrete Finishing	X		
NS-14	Material and Equipment Use Over Water		X	Arid Environment
NS-15	Demolition Adjacent to Water		X	No Demolition anticipated / Arid Environment
NS-16	Temporary Batch Plants		X	No onsite batch plant planned

DRAFT

CONSTRUCTION SITE BMPs
CONSIDERATION CHECKLIST

The BMPs listed here should be considered for every project. Those BMPs that are not included in the SWPPP must be checked as "Not Used" with a brief statement describing why it is not being used.

WASTE MANAGEMENT AND MATERIALS POLLUTION CONTROL BMPs

BMP No.	BMP	CHECK IF USED	CHECK IF NOT USED	IF NOT USED, STATE REASON
WM-1	Material Delivery and Storage	X		
WM-2	Material Use	X		
WM-3	Stockpile Management	X		
WM-4	Spill Prevention and Control	X		
WM-5	Solid Waste Management	X		
WM-6	Hazardous Waste Management	X		
WM-7	Contaminated Soil Management		X	No known contamination present on site
WM-8	Concrete Waste Management	X		
WM-9	Sanitary/Septic Waste Management	X		
WM-10	Liquid Waste Management	X		

DRAFT

Attachment D

Computation Sheet for Determining Runoff Coefficients

DRAFT

Total Site Area = __________ Acres (A)

Existing Site Conditions

Impervious Site Area [1] = __________ Acres (B)

Impervious Site Area Runoff Coefficient [2, 4] = __________ 0.95 (C)

Pervious Site Area [3] = __________ Acres (D)

Pervious Site Area Runoff Coefficient [4] = __________ (E)

Existing Site Area Runoff Coefficient $\frac{(B\times C)+(D\times E)}{(A)}$ = __________ (F)

Proposed Site Conditions (after construction)

Impervious Site Area [1] = __________ Acres (G)

Impervious Site Area Runoff Coefficient [2, 4] = __________ 0.95 (H)

Pervious Site Area [3] = __________ Acres (I)

Pervious Site Area Runoff Coefficient [4] = __________ (J)

Proposed Site Area Runoff Coefficient $\frac{(G\times H)+(I\times J)}{(A)}$ = __________ (K)

1. Includes paved areas, areas covered by buildings, and other impervious surfaces.
2. Use 0.95 unless lower or higher runoff coefficient can be verified.
3. Includes areas of vegetation, most unpaved or uncovered soil surfaces, and other pervious areas.
4. Refer to local Hydrology Manual for typical C values.

Attachment E

Computational Sheet for Determining Run-on Discharges

Existing Site Conditions

Area Runoff Coefficient = ____________________ (A)

Area Rainfall Intensity = ____________________ (B)

Drainage Area = ______________ Acres (C)

Site Area Run-on Discharge (A) x (B) x (C) = ____________________ (D)

DRAFT

Attachment F

Notice of Intent (NOI)

DRAFT

State Water Resources Control Board

Winston H. Hickox
Secretary for
Environmental
Protection

Division of Water Quality
1001 I Street • Sacramento, California 95814 • (916) 341-5537
Mailing Address: P.O. Box 1977 • Sacramento, California • 95812-1977
FAX (916) 341-5543 • Internet Address: http://www.swrcb.ca.gov

Gray Dav
Governor

To: CONSTRUCTION STORM WATER DISCHARGER

SUBJECT: CHECKLIST FOR SUBMITTING A NOTICE OF INTENT

In order for the State Water Resources Control Board to expeditiously process your Notice of Intent (NOI), the following items must be submitted to either of the addresses indicated below:

1._______ NOI (please keep a copy for your files) with all applicable sections completed and original signature of the landowner or signatory agent;

2._______ Check made out to the "State Water Resources Control Board" for **$700.00**; and

3. _______ Site Map of the facility (see NOI instructions). DO NOT SEND BLUEPRINTS

U.S. Postal Service Address

State Water Resources Control Board
Division of Water Quality
Attn: Storm Water Section
P.O. Box 1977
Sacramento, CA 95812-1977

Overnight Mailing Address

State Water Resources Control Board
Division Of Water Quality
Attn: Storm Water, 15th Floor
1001 I Street
Sacramento, CA 95814

NOIs are processed in the order they are received. A NOI receipt letter will be mailed to the land owner within approximately two weeks. Incomplete NOI submittals will be returned to the landowner's address within the same timeframe and will specify the reason(s) for return. If you need a receipt letter by a specific date (for example, to provide to a local agency), we advise that you submit your NOI thirty (30) days prior to the date the receipt letter is needed.

Please do not call us to verify your NOI status. A copy of your NOI receipt letter will be available on our web page within twenty-four (24) hours of processing. Go to: http://esmr.swrcb.ca.gov/dwq/ConReceiptLetter.asp to retrieve an electronic copy of your NOI receipt letter. If you have any questions regarding this matter, please contact us at (916) 341-5537.

FACT SHEET
FOR
WATER QUALITY ORDER 99-08-DWQ

STATE WATER RESOURCES CONTROL BOARD (SWRCB)
901 P STREET, SACRAMENTO, CALIFORNIA 95814

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) GENERAL PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY (GENERAL PERMIT)

BACKGROUND

In 1972, the Federal Water Pollution Control Act (also referred to as the Clean Water Act [CWA]) was amended to provide that the discharge of pollutants to waters of the United States from any point source is unlawful unless the discharge is in compliance with an NPDES permit. The 1987 amendments to the CWA added Section 402(p) which establishes a framework for regulating municipal and industrial storm water discharges under the NPDES Program. On November 16, 1990, the U.S. Environmental Protection Agency (USEPA) published final regulations that establish storm water permit application requirements for specified categories of industries. The regulations provide that discharges of storm water to waters of the United States from construction projects that encompass five (5) or more acres of soil disturbance are effectively prohibited unless the discharge is in compliance with an NPDES Permit. Regulations (Phase II Rule) that became final on December 8, 1999 expand the existing NPDES program to address storm water discharges from construction sites that disturb land equal to or greater than one (1) acre and less than five (5) acres (small construction activity). The regulations require that small construction activity, other than those regulated under an individual or Regional Water Quality Control Board General Permit, must be permitted no later than March 10, 2003.

While federal regulations allow two permitting options for storm water discharges (individual permits and General Permits), the SWRCB has elected to adopt only one statewide General Permit at this time that will apply to all storm water discharges associated with construction activity, except from those on Tribal Lands, in the Lake Tahoe Hydrologic Unit, and those performed by the California Department of Transportation (Caltrans). Construction on Tribal Lands is regulated by an USEPA permit, the Lahontan Regional Water Control Board adopted a separate NPDES permit for the Lake Tahoe Hydrologic Unit, and the SWRCB adopted a separate NPDES permit for Caltrans projects. This General Permit requires all dischargers where construction activity disturbs one acre or more, to:

1. Develop and implement a Storm Water Pollution Prevention Plan (SWPPP) which specifies Best Management Practices (BMPs) that will prevent all construction pollutants from contacting storm water and with the intent of keeping all products of erosion from moving off site into receiving waters.

2. Eliminate or reduce nonstorm water discharges to storm sewer systems and other waters of the nation.

3. Perform inspections of all BMPs.

This General Permit shall be implemented and enforced by the nine California Regional Water Quality Control Boards (RWQCBs).

The General Permit accompanying this fact sheet regulates storm water runoff from construction sites. Regulating many storm water discharges under one permit will greatly reduce the otherwise overwhelming administrative burden associated with permitting individual storm water discharges. Dischargers shall submit a Notice of Intent (NOI) to obtain coverage under this General Permit. It is expected that as the storm water program develops, the RWQCBs may issue General Permits or individual permits containing more specific permit provisions. When this occurs, those dischargers will no longer be regulated by this General Permit.

On August 19, 1999, the State Water Resources Control Board (SWRCB) reissued the General Construction Storm Water Permit (Water Quality Order 99-08-DWQ referred to as "General Permit"). The San Francisco BayKeeper, Santa Monica BayKeeper, San Diego BayKeeper, and Orange Coast Keeper filed a petition for writ of mandate challenging the General Permit in the Superior Court, County of Sacramento. The Court issued a judgment and writ of mandate on September 15, 2000. The Court directed the SWRCB to modify the provisions of the General Permit to require permittees to implement specific sampling and analytical procedures to determine whether Best Management Practices (BMPs) implemented on a construction site are: (1) preventing further impairment by sediment in storm waters discharged directly into waters listed as impaired for sediment or silt, and (2) preventing other pollutants, that are known or should be known by permittees to occur on construction sites and that are not visually detectable in storm water discharges, from causing or contributing to exceedances of water quality objectives. The monitoring provisions in the General Permit have been modified pursuant to the court order.

TYPES OF CONSTRUCTION ACTIVITY COVERED BY THIS GENERAL PERMIT

Construction activity subject to this General Permit includes clearing, grading, disturbances to the ground such as stockpiling, or excavation that results in soil disturbances of at least one acre of total land area. Construction activity that results in soil disturbances of less than one acre is subject to this General Permit if the construction activity is part of a larger common plan of development that encompasses one or more acres of soil disturbance or if there is significant water quality impairment resulting from the activity. Construction activity does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of the facility, nor does it include emergency construction activities required to protect public health and safety. Dischargers should confirm with the local RWQCB whether or not a particular routine maintenance activity is subject to this General Permit.

A construction project which includes a dredge and/or fill discharge to any jurisdictional surface water (e.g., wetland, channel, pond, or marine water) will also need a CWA Section 404 permit from the U.S. Army Corps of Engineers and a CWA Section 401 Water Quality Certification from the RWQCB/SWRCB. Storm water discharges from dredge spoil placement which occurs outside of Corps jurisdiction (upland sites) and are part of construction activity which disturbs one or more acres of land are covered by this general permit. Proponents of construction projects which disturb one or more acres of land within the jurisdictional boundaries of a CWA Section 404 permit should contact the local RWQCB to determine the applicability of this permit to the project.

NOTIFICATION REQUIREMENTS

It is the responsibility of the landowner to obtain coverage under this General Permit prior to commencement of construction activities. To obtain coverage, the landowner must file an NOI with a vicinity map and the appropriate fee with the SWRCB. In addition, coverage under this permit shall not occur until the applicant develops an adequate SWPPP for the project. Section A of the General Permit outlines the required contents of a SWPPP. For proposed construction activity on easements or on nearby property by agreement or permission, the entity responsible for the construction activity shall file an NOI and filing fee and shall be responsible for development of the SWPPP, all of which must occur prior to commencement of construction activities.

A separate NOI shall be submitted to the SWRCB for each construction site. Owners of new construction shall file an NOI prior to the commencement of construction. Owners of an ongoing construction site that is covered under the previous General Construction Permit (WQ Order No.92-08-DWQ) (1) shall continue to implement their existing SWPPP and monitoring program and (2) shall implement any necessary revisions to their SWPPP in a timely manner but in no case later than 90-calender days from adoption of this General Permit in accordance with Section A of this General Permit.

The NOI requirements of the General Permit are intended to establish a mechanism which can be used to clearly identify the responsible parties, locations, and scope of operations of dischargers covered by the General Permit and to document the discharger's knowledge of the requirements for a SWPPP.

The NOI must be sent to the following address:

State Water Resources Control Board
Division of Water Quality
Storm Water Permit Unit
P.O. Box 1977
Sacramento, CA 95812-1977

The current annual fee for this General Permit is $700.

When construction is complete or ownership has been transferred, dischargers shall file a Notice of Termination with the RWQCB certifying that all State and local requirements have been met in accordance with Special Provisions for Construction Activity, C.7, of the General Permit.

Dischargers who fail to obtain coverage under this General Permit for storm water discharges to surface waters will be in violation of the CWA and the California Water Code.

CONSTRUCTION ACTIVITY NOT COVERED BY THIS GENERAL PERMIT

This General Permit does not apply to storm water discharges from (1) those areas on Tribal Lands; (2) the Lake Tahoe Hydrologic Unit; (3) construction under one acre, unless part of a larger common plan of development or sale; (4) projects covered by an individual NPDES Permit for storm water discharges associated with construction activity; and (5) landfill construction that is subject to the general industrial permit.

Storm water discharges in the Lake Tahoe Hydrologic Unit are regulated by a separate permit(s) adopted by the California Regional Water Quality Control Board, Lahontan Region (LRWQCB). USEPA regulates storm water discharges on Tribal Lands. Permit applications for storm water discharges that will be conducted in the Lake Tahoe Hydrologic Unit must be submitted directly to the LRWQCB.

DESCRIPTION OF GENERAL PERMIT CONDITIONS

The following is a brief description of the major provisions of the General Permit and the basis for the General Permit.

Prohibitions

This General Permit authorizes the discharge of storm water to surface waters from construction activities that result in the disturbance of one or more acres of land. It prohibits the discharge of materials other than storm water and authorized non-storm water discharges and all discharges which contain a hazardous substance in excess of reportable quantities established at 40 Code of Federal Regulations (CFR) 117.3 or 40 CFR 302.4 unless a separate NPDES Permit has been issued to regulate those discharges. In addition, this General Permit contains provisions that uphold discharge prohibitions contained in water quality control plans, as implemented through the nine RWQCBs.

Effluent Limitations

Permits for storm water discharges associated with construction activity shall meet all applicable provisions of Sections 301 and 402 of the CWA. These provisions require controls of pollutant discharges that utilize best available technology economically achievable (BAT) and best conventional pollutant control technology (BCT) to reduce pollutants and any more stringent controls necessary to meet water quality standards.

It is not feasible at this time for the SWRCB to establish numeric effluent limitations. The reasons why it is not feasible to establish numeric effluent limitations are discussed in detail in SWRCB Order Nos. WQ 91-03 and WQ 91-04. Therefore, the effluent limitations contained in this General Permit are narrative and include the requirement to implement appropriate BMPs. The BMPs shall primarily emphasize source controls such as erosion control and pollution prevention methods. The discharger shall also install structural controls, as necessary, such as sediment control which will constitute BAT and BCT and will achieve compliance with water quality standards. The narrative effluent limitations constitute compliance with the requirements of the CWA.

Elimination or reduction of nonstorm water discharges is a major goal of this General Permit. Nonstorm water discharges include a wide variety of sources, including improper dumping, spills, or leakage from storage tanks or transfer areas. Nonstorm water discharges may contribute a significant pollutant load to receiving waters. Measures to control spills, leakage, and dumping and to prevent illicit connections during construction shall be addressed through structural as well as non-structural BMPs.

This General Permit prohibits the discharge of materials other than storm water and authorized nonstorm water discharges. It is recognized that certain nonstorm water discharges may be necessary for the completion of construction projects. Such discharges include, but are not limited to irrigation of vegetative erosion control measures, pipe flushing and testing, street cleaning, and dewatering. Such discharges are allowed by this General Permit provided they are not relied upon to clean up failed or inadequate construction or post-construction BMPs designed to keep materials onsite. These authorized nonstorm water discharges shall (1) be infeasible to eliminate, (2) comply with BMPs as described in the SWPPP, and (3) not cause or contribute to a violation of water quality standards. Additionally, these discharges may be required to be permitted by the local RWQCB (e.g., some RWQCBs have adopted General Permits for dewatering discharges). This General Permit is performance-based to the extent that it prohibits the discharge of storm water that causes or threatens to cause pollution, contamination, or nuisance; but it also allows the owner/developer to determine the most economical, effective, and possibly innovative BMPs.

The requirements of this General Permit are intended to be implemented on a year-round basis, not just during the part of the year when there is a high probability of a precipitation event which results in storm water runoff. The permit should be implemented at the appropriate level and in a proactive manner during all seasons while construction is ongoing.

Weather and storm predictions or weather information concerning the 10-year, 6-hour storm event and mean annual rainfall can be obtained by calling the Western Regional Climate Center at 775-674-7010 or via the internet at www.wrcc.dri.edu/precip.html and/or www.wrcc.dri.edu/pcpnfreq.html.

Receiving Water Limitations Language

The receiving water limitations language is fundamentally different from the language adopted in the SWRCB General Industrial Activities Storm Water Permit on April 17, 1997. Construction related activities which cause or contribute to an exceedance of water quality standards must be corrected immediately and cannot wait for the RWQCB to approve a plan of action to correct. The dynamic nature of construction activity allows the discharger the ability to more quickly identify and correct the source of the exceedances. Therefore, the owner is required to take immediate corrective action and to provide a report to the appropriate RWQCB within
14-calendar days of the violation describing the corrective action.

Storm Water Pollution Prevention Plan (SWPPP)

This General Permit requires development and implementation of a SWPPP. This document emphasizes the use of appropriately selected, correctly installed and maintained pollution reduction BMPs. This approach provides the flexibility necessary to establish BMPs which can effectively address source control of pollutants during changing construction activities.

All dischargers shall prepare and implement a SWPPP prior to disturbing a site. The SWPPP must be implemented at the appropriate level to protect water quality at all times throughout the life of the project. Nonstorm water BMPs must be implemented year round. The SWPPP shall remain on the site while the site is under construction, commencing with the initial mobilization and ending with the termination of coverage under the permit.

The SWPPP has two major objectives: (1) to help identify the sources of sediment and other pollutants that affect the quality of storm water discharges and (2) to describe and ensure the implementation of BMPs to reduce or eliminate sediment and other pollutants in storm water as well as nonstorm water discharges. The SWPPP shall include BMPs which address source control and, if necessary, shall also include BMPs which address pollutant control.

Required elements of a SWPPP include: (1) site description addressing the elements and characteristics specific to the site, (2) descriptions of BMPs for erosion and sediment controls, (3) BMPs for construction waste handling and disposal, (4) implementation of approved local plans, (5) proposed post-construction controls, including description of local post-construction erosion and sediment control requirements, and (6) nonstorm water management.

To ensure that the preparation, implementation, and oversight of the SWPPP is sufficient for effective pollution prevention, individuals responsible for creating, revising, overseeing, and implementing the SWPPP should participate in applicable training programs and document such training in the SWPPP.

SWPPPs are reports that are available to the public under Section 308(b) of the CWA and will be made available by the RWQCB upon request.
Monitoring Program

Another major feature of the General Permit is the development and implementation of a monitoring program. All dischargers are required to conduct inspections of the construction site prior to anticipated storm events and after actual storm events. During extended storm events, inspections must be made during each 24-hour period. The goals of these inspections are (1) to identify areas contributing to a storm water discharge; (2) to evaluate whether measures to reduce pollutant loadings identified in the SWPPP are adequate and properly installed and functioning in accordance with the terms of the General Permit; and (3) whether additional control practices or corrective maintenance activities are needed. Equipment, materials, and workers must be available for rapid response to failures and emergencies. All corrective maintenance to BMPs shall be performed as soon as possible, depending upon worker safety.

Each discharger shall certify annually that the construction activities are in compliance with the requirements of this General Permit. Dischargers who cannot certify annual compliance shall notify the appropriate RWQCB. A well-developed monitoring program will provide a good method for checking the effectiveness of the SWPPP.

Retention of Records

The discharger is required to retain records of all monitoring information, copies of all reports required by this General Permit, and records of all data used to complete the NOI for all construction activities to be covered by the General Permit for a period of at least three years from the date generated. This period may be extended by request of the SWRCB and/or RWQCB. With the exception of reporting noncompliance to the appropriate RWQCB, dischargers are not required to submit the records, except upon specific request by the RWQCB.

STATE WATER RESOURCES CONTROL BOARD (SWRCB)
ORDER NO. 99 - 08 - DWQ
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
GENERAL PERMIT NO. CAS000002

WASTE DISCHARGE REQUIREMENTS (WDRS)
FOR
DISCHARGES OF STORM WATER RUNOFF ASSOCIATED WITH CONSTRUCTION ACTIVITY

The State Water Resources Control Board finds that:

1. Federal regulations for controlling pollutants in storm water runoff discharges were promulgated by the U.S. Environmental Protection Agency (USEPA) on November 16, 1990 (40 Code of Federal Regulations (CFR) Parts 122, 123, and 124). The regulations require discharges of storm water to surface waters associated with construction activity including clearing, grading, and excavation activities (except operations that result in disturbance of less than five acres of total land area and which are not part of a larger common plan of development or sale) to obtain an NPDES permit and to implement Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology (BCT) to reduce or eliminate storm water pollution.

   On December 8, 1999 federal regulations promulgated by USEPA (40CFR Parts 9, 122, 123, and 124) expanded the NPDES storm water program to include storm water discharges from municipal separate storm sewer systems (MS4s) and construction sites that were smaller than those previously included in the program. Federal regulation 40 CFR § 122.26(b)(15) defines small construction activity as including clearing, grading, and excavating that result in land disturbance of equal to or greater than one acre or less than five acres or is part of a larger common plan of development or sale. Permit applications for small construction activities are due by March 10, 2003.

2. This General Permit regulates pollutants in discharges of storm water associated with construction activity (storm water discharges) to surface waters, except from those areas on Tribal Lands; Lake Tahoe Hydrologic Unit; construction projects which disturb less than one acre, unless part of a larger common plan of development or sale; and storm water discharges which are determined ineligible for coverage under this General Permit by the California Regional Water Quality Control Boards (RWQCBs). Attachment 1 contains addresses and telephone numbers of each RWQCB office.

3. This General Permit does not preempt or supersede the authority of local storm water management agencies to prohibit, restrict, or control storm water discharges to separate storm sewer systems or other watercourses within their jurisdiction, as allowed by State and Federal law.

4. To obtain authorization for proposed storm water discharges to surface waters, pursuant to this General Permit, the landowner (discharger) must submit a Notice of Intent (NOI) with a vicinity map and the appropriate fee to the SWRCB prior to commencement of construction activities. In addition, coverage under this General Permit shall not occur until the applicant develops a Storm Water Pollution Prevention Plan (SWPPP) in accordance with the requirements of Section A of this permit for the project. For proposed construction activity conducted on easements or on nearby property by agreement or permission, or by an owner or lessee of a mineral estate (oil, gas, geothermal, aggregate, precious metals, and/or industrial minerals) entitled to conduct the activities, the entity responsible for the construction activity must submit the NOI and filing fee and shall be responsible for development of the SWPPP.

5. If an individual NPDES Permit is issued to a discharger otherwise subject to this General Permit or if an alternative General Permit is subsequently adopted which covers storm water discharges regulated by this General Permit, the applicability of this General Permit to such discharges is automatically terminated on the effective date of the individual permit or the date of approval for coverage under the subsequent General Permit.

6. This action to adopt an NPDES permit is exempt from the provisions of the California Environmental Quality Act (Public Resources Code Section 21100, et seq.) in accordance with section 13389 of the California Water Code.

7. The SWRCB adopted the California Ocean Plan, and the RWQCBs have adopted and the SWRCB has approved Water Quality Control Plans (Basin Plans). Dischargers regulated by this General Permit must comply with the water quality standards in these Basin Plans and subsequent amendments thereto.

8. The SWRCB finds storm water discharges associated with construction activity to be a potential significant sources of pollutants. Furthermore, the SWRCB finds that storm water discharges associated with construction activities have the reasonable potential to cause or contribute to an excursion above water quality standards for sediment in the water bodies listed in Attachment 3 to this permit.

9. It is not feasible at this time to establish numeric effluent limitations for pollutants in storm water discharges from construction activities. Instead, the provisions of this General Permit require implementation of Best Management Practices (BMPs) to control and abate the discharge of pollutants in storm water discharges.

10. Discharges of non-storm water may be necessary for the completion of certain construction projects. Such discharges include, but are not limited to: irrigation of vegetative erosion control measures, pipe flushing and testing, street cleaning, and dewatering. Such discharges are authorized by this General Permit as long as they (a) do comply with Section A.9 of this General Permit, (b) do not cause or contribute to violation of any water quality standard, (c) do not violate any other provision of this

General Permit, (d) do not require a non-storm water permit as issued by some RWQCBs, and (e) are not prohibited by a Basin Plan. If a non-storm water discharge is subject to a separate permit adopted by a RWQCB, the discharge must additionally be authorized by the RWQCB permit.

11. Following adoption of this General Permit, the RWQCBs shall enforce the provisions herein including the monitoring and reporting requirements.

12. Following public notice in accordance with State and Federal laws and regulations, the SWRCB in a public meeting on June 8, 1998, heard and considered all comments. The SWRCB has prepared written responses to all significant comments.

13. This Order is an NPDES permit in compliance with section 402 of the Clean Water Act (CWA) and shall take effect upon adoption by the SWRCB provided the Regional Administrator of the USEPA has no objection. If the USEPA Regional Administrator objects to its issuance, the General Permit shall not become effective until such objection is withdrawn.

14. This General Permit does not authorize discharges of fill or dredged material regulated by the U.S. Army Corps of Engineers under CWA section 404 and does not constitute a waiver of water quality certification under CWA section 401.

15 The Monitoring Program and Reporting Requirements are modified in compliance with a judgment in the case of San Francisco BayKeeper, et al. v. State Water Resources Control Board. The modifications include sampling and analysis requirements for direct discharges of sediment to waters impaired due to sediment and for pollutants that are not visually detectable in runoff that may cause or contribute to an exceedance of water quality objectives.

16 Storm water discharges associated with industrial activity that are owned or operated by municipalities serving populations less than 100,000 people are no longer exempt from the need to apply for or obtain a storm water discharge permit. A temporary exemption, which was later extended by USEPA, was provided under section 1068(c) of the Intermodal Surface Transportation and Efficiency Act (ISTEA) of 1991. Federal regulation 40 CFR § 122.26(e)(1)(ii) requires the above municipalities to submit permit application by March 10, 2003.

17 This permit may be reopened and modified to include different monitoring requirements for small construction activity than for construction activity over five (5) acres.

IT IS HEREBY ORDERED that all dischargers who file an NOI indicating their intention to be regulated under the provisions of this General Permit shall comply with the following:

A. DISCHARGE PROHIBITIONS:

1. Authorization pursuant to this General Permit does not constitute an exemption to applicable discharge prohibitions prescribed in Basin Plans, as implemented by the nine RWQCBs.

2. Discharges of material other than storm water which are not otherwise authorized by an NPDES permit to a separate storm sewer system (MS4) or waters of the nation are prohibited, except as allowed in Special Provisions for Construction Activity, C.3.

3. Storm water discharges shall not cause or threaten to cause pollution, contamination, or nuisance.

4. Storm water discharges regulated by this General Permit shall not contain a hazardous substance equal to or in excess of a reportable quantity listed in 40 CFR Part 117 and/or 40 CFR Part 302.

B. RECEIVING WATER LIMITATIONS:

1. Storm water discharges and authorized nonstorm water discharges to any surface or ground water shall not adversely impact human health or the environment.

2. The SWPPP developed for the construction activity covered by this General Permit shall be designed and implemented such that storm water discharges and authorized nonstorm water discharges shall not cause or contribute to an exceedance of any applicable water quality standards contained in a Statewide Water Quality Control Plan and/or the applicable RWQCB's Basin Plan.

3. Should it be determined by the discharger, SWRCB, or RWQCB that storm water discharges and/or authorized nonstorm water discharges are causing or contributing to an exceedance of an applicable water quality standard, the discharger shall:

   a. Implement corrective measures immediately following discovery that water quality standards were exceeded, followed by notification to the RWQCB by telephone as soon as possible but no later than 48 hours after the discharge has been discovered. This notification shall be followed by a report within 14-calender days to the appropriate RWQCB, unless otherwise directed by the RWQCB, describing (1) the nature and cause of the water quality standard exceedance; (2) the BMPs currently being implemented; (3) any additional BMPs which will be implemented to prevent or reduce pollutants that are causing or contributing to the exceedance of water quality standards; and (4) any maintenance or repair of BMPs. This report shall include an implementation schedule for corrective actions and shall describe the actions taken to reduce the pollutants causing or contributing to the exceedance.

b. The discharger shall revise its SWPPP and monitoring program immediately after the report to the RWQCB to incorporate the additional BMPs that have been and will be implemented, the implementation schedule, and any additional monitoring needed.

c. Nothing in this section shall prevent the appropriate RWQCB from enforcing any provisions of this General Permit while the discharger prepares and implements the above report.

C. SPECIAL PROVISIONS FOR CONSTRUCTION ACTIVITY:

1. All dischargers shall file an NOI and pay the appropriate fee for construction activities conducted at each site as required by Attachment 2: Notice of Intent--General Instructions.

2. All dischargers shall develop and implement a SWPPP in accordance with Section A: Storm Water Pollution Prevention Plan. The discharger shall implement controls to reduce pollutants in storm water discharges from their construction sites to the BAT/BCT performance standard.

3. Discharges of non-storm water are authorized only where they do not cause or contribute to a violation of any water quality standard and are controlled through implementation of appropriate BMPs for elimination or reduction of pollutants. Implementation of appropriate BMPs is a condition for authorization of non-storm water discharges. Non-storm water discharges and the BMPs appropriate for their control must be described in the SWPPP. Wherever feasible, alternatives which do not result in discharge of nonstorm water shall be implemented in accordance with Section A.9. of the SWPPP requirements.

4. All dischargers shall develop and implement a monitoring program and reporting plan in accordance with Section B: Monitoring Program and Reporting Requirements.

5. All dischargers shall comply with the lawful requirements of municipalities, counties, drainage districts, and other local agencies regarding discharges of storm water to separate storm sewer systems or other watercourses under their jurisdiction, including applicable requirements in municipal storm water management programs developed to comply with NPDES permits issued by the RWQCBs to local agencies.

6. All dischargers shall comply with the standard provisions and reporting requirements contained in Section C: Standard Provisions.

7. The discharger may terminate coverage for a portion of the project under this General Permit when ownership of a portion of this project has been transferred or when a phase within this multi-phase project has been completed. When ownership has transferred, the discharger must submit to its RWQCB a Change of Information Form (COI) Attachment 4 with revised site map and the name, address and telephone number of the new owner(s). Upon transfer of title, the discharger should notify the new owner(s) of the need to obtain coverage under this General Permit. The new owner must comply with provisions of Sections A. 2. (c) and
B. 2. (b) of this General Permit. To terminate coverage for a portion of the project when a phase has been completed, the discharger must submit to its RWQCB a COI with a revised map that identifies the newly delineated site.

8. The discharger may terminate coverage under this General Permit for a complete project by submitting to its RWQCB a Notice of Termination Form (NOT), and the post-construction BMPs plan according to Section A.10 of this General Permit. Note that a construction project is considered complete only when all portions of the site have been transferred to a new owner; or the following conditions have been met:

   a. There is no potential for construction related storm water pollution,

   b. All elements of the SWPPP have been completed,

   c. Construction materials and waste have been disposed of properly,

   d. The site is in compliance with all local storm water management requirements, and

   e. A post-construction storm water management plan is in place as described in the site's SWPPP.

9. This General Permit expires five years from the date of adoption.

D. REGIONAL WATER QUALITY CONTROL BOARD (RWQCB) AUTHORITIES:

1. RWQCBs shall:

   a. Implement the provisions of this General Permit. Implementation of this General Permit may include, but is not limited to requesting the submittal of SWPPPS, reviewing SWPPPs, reviewing monitoring reports, conducting compliance inspections, and taking enforcement actions.

   b. Issue permits as they deem appropriate to individual dischargers, categories of dischargers, or dischargers in a geographic area. Upon issuance of such permits by a RWQCB, the affected dischargers shall no longer be regulated by this General Permit.

2. RWQCBs may require, on a case-by-case basis, the inclusion of an analysis of potential downstream impacts on receiving waterways due to the permitted construction.

3. RWQCBs may provide information to dischargers on the development and implementation of SWPPPs and monitoring programs and may require revisions to SWPPPs and monitoring programs.

4. RWQCBs may require dischargers to retain records for more than three years.

5. RWQCBs may require additional monitoring and reporting program requirements including sampling and analysis of discharges to water bodies listed in Attachment 3 to this permit. Additional requirements imposed by the RWQCB should be consistent with the overall monitoring effort in the receiving waters.

6. RWQCBs may issue individual NPDES permits for those construction activities found to be ineligible for coverage under this permit.

CERTIFICATION

The undersigned, Administrative Assistant to the Board, does hereby certify that the foregoing is a full, true, and correct copy of an order duly and regularly adopted at a meeting of the State Water Resources Control Board held on August 19, 1999.

AYE: James M. Stubchaer
Mary Jane Forster
John W. Brown
Arthur G. Baggett, Jr.

NO: None

ABSENT: None

ABSTAIN: None

/s/
Maureen Marché
Administrative Assistant to the Board

SECTION A: STORM WATER POLLUTION PREVENTION PLAN

1. Objectives

A Storm Water Pollution Prevention Plan (SWPPP) shall be developed and implemented to address the specific circumstances for each construction site covered by this General Permit. The SWPPP shall be certified in accordance with the signatory requirements of section C, Standard Provision for Construction Activities (9). The SWPPP shall be developed and amended or revised, when necessary, to meet the following objectives:

a. Identify all pollutant sources including sources of sediment that may affect the quality of storm water discharges associated with construction activity (storm water discharges) from the construction site, and

b. Identify non-storm water discharges, and

c. Identify, construct, implement in accordance with a time schedule, and maintain Best Management Practices (BMPs) to reduce or eliminate pollutants in storm water discharges and authorized nonstorm water discharges from the construction site during construction, and

d. Develop a maintenance schedule for BMPs installed during construction designed to reduce or eliminate pollutants after construction is completed (post-construction BMPs).

e. Identify a sampling and analysis strategy and sampling schedule for discharges from construction activity which discharge directly into water bodies listed on Attachment 3. (Clean Water Act Section 303(d) [303(d)] Water Bodies listed for Sedimentation).

f. For all construction activity, identify a sampling and analysis strategy and sampling schedule for discharges that have been discovered through visual monitoring to be potentially contaminated by pollutants not visually detectable in the runoff.

2. Implementation Schedule

a. For construction activity commencing on or after adoption of this General Permit, the SWPPP shall be developed prior to the start of soil-disturbing activity in accordance with this Section and shall be implemented concurrently with commencement of soil-disturbing activities.

b. Existing permittees engaging in construction activities covered under the terms of the previous General Construction Permit SWPPP (WQ Order No.92-08-DWQ) shall continue to implement their existing SWPPP and shall implement any necessary revisions to their SWPPP in accordance with this Section of the General Permit in a timely manner, but in no case more than 90-calender days from the date of adoption of this General Permit.

c. For ongoing construction activity involving a change of ownership of property, the new owner shall review the existing SWPPP and amend if necessary, or develop a new SWPPP within 45-calender days.

d. Existing permittees shall revise their SWPPP in accordance with the sampling and analysis modifications prior to August 1, 2001. For ongoing construction activity involving a change of ownership the new owner shall review the existing SWPPP and amend the sampling and analysis strategy, if required, within 45 days. For construction activity commencing after the date of adoption, the SWPPP shall be developed in accordance with the modification language adopted.

3. Availability

The SWPPP shall remain on the construction site while the site is under construction during working hours, commencing with the initial construction activity and ending with termination of coverage under the General Permit.

4. Required Changes

a. The discharger shall amend the SWPPP whenever there is a change in construction or operations which may affect the discharge of pollutants to surface waters, ground waters, or a municipal separate storm sewer system (MS4). The SWPPP shall also be amended if the discharger violates any condition of this General Permit or has not achieved the general objective of reducing or eliminating pollutants in storm water discharges. If the RWQCB determines that the discharger is in violation of this General Permit, the SWPPP shall be amended and implemented in a timely manner, but in no case more than 14-calendar days after notification by the RWQCB. All amendments should be dated and directly attached to the SWPPP.

b. The RWQCB or local agency with the concurrence of the RWQCB may require the discharger to amend the SWPPP.

5. Source Identification

The SWPPP shall include: (a) project information and (b) pollutant source identification combined with an itemization of those BMPs specifically chosen to control the pollutants listed.

a. Project Information

(1) The SWPPP shall include a vicinity map locating the project site with respect to easily identifiable major roadways, geographic features, or landmarks. At a minimum, the map must show the construction site perimeter, the geographic features surrounding the site, and the general topography.

(2) The SWPPP shall include a site map(s) which shows the construction project in detail, including the existing and planned paved areas and buildings.

(a) At a minimum, the map must show the construction site perimeter; existing and proposed buildings, lots, roadways, storm water collection and discharge points; general topography both before and after construction; and the anticipated discharge location(s) where the storm water from the construction site discharges to a municipal storm sewer system or other water body.

(b) The drainage patterns across the project area must clearly be shown on the map, and the map must extend as far outside the site perimeter as necessary to illustrate the relevant drainage areas. Where relevant drainage areas are too large to depict on the map, map notes or inserts illustrating the upstream drainage areas are sufficient.

(c) Temporary on-site drainages to carry concentrated flow shall be selected to comply with local ordinances, to control erosion, to return flows to their natural drainage courses, and to prevent damage to downstream properties.

3. Information presented in the SWPPP may be represented either by narrative or by graphics. Where possible, narrative descriptions should be plan notes. Narrative descriptions which do not lend themselves to plan notes can be contained in a separate document which must be referenced on the plan.

b. Pollutant Source and BMP Identification

The SWPPP shall include a description of potential sources which are likely to add pollutants to storm water discharges or which may result in nonstorm water discharges from the construction site. Discharges originating from off-site which flow across or through areas disturbed by construction that may contain pollutants should be reported to the RWQCB.

The SWPPP shall:

(1) Show drainage patterns and slopes anticipated after major grading activities are completed. Runoff from off-site areas should be prevented from flowing through areas that have been disturbed by construction unless appropriate conveyance systems are in place. The amount of anticipated storm water run-on must be considered to determine the appropriateness of the BMPs chosen. Show all calculations for anticipated storm water run-on, and describe all BMPs implemented to divert off-site drainage described in section A. 5 a. (2) (c) around or through the construction project.

(2) Show the drainage patterns into each on-site storm water inlet point or receiving water. Show or describe the BMPs that will protect operational storm water inlets or receiving waters from contaminated discharges other than sediment discharges, such as, but not limited to: storm water with elevated pH levels from contact with soil amendments such as lime or gypsum; slurry from sawcutting of concrete or asphalt ;washing of exposed aggregate concrete; concrete rinse water; building washing operations; equipment washing operations; minor street washing associated with street delineation; and/or sealing and paving activities occurring during rains.

(3) Show existing site features that, as a result of known past usage, may contribute pollutants to storm water, (e.g., toxic materials that are known to have been treated, stored, disposed, spilled, or leaked onto the construction site). Show or describe the BMPs implemented to minimize the exposure of storm water to contaminated soil or toxic materials.

(4) Show areas designated for the (a) storage of soil or waste, (b) vehicle storage and service areas, (c) construction material loading, unloading, and access areas, (d) equipment storage, cleaning, and maintenance areas.

(5) Describe the BMPs for control of discharges from waste handling and disposal areas and methods of on-site storage and disposal of construction materials and construction waste. Describe the BMPs designed to minimize or eliminate the exposure of storm water to construction materials, equipment, vehicles, waste storage areas, or service areas. The BMPs described shall be in compliance with Federal, State, and local laws, regulations, and ordinances.

(6) Describe all post-construction BMPs for the project, and show the location of each BMP on the map. (Post-construction BMPs consist of permanent features designed to minimize pollutant discharges, including sediment, from the site after construction has been completed.) Also, describe the agency or parties to be the responsible party for long-term maintenance of these BMPs.

(7) Show the locations of direct discharge from the construction site into a Section 303(d) list water body. Show the designated sampling locations in the receiving waters, which represent the prevailing conditions of the water bodies upstream of the construction site discharge and immediately downstream from the last point of discharge.

(8) Show the locations designated for sampling the discharge from areas identified in Section A. 5. b. (2), (3), and (4) and Section A. 5. c. (1) and (2). Samples shall be taken should visual monitoring indicate that there has been a breach, malfunction, leakage, or spill from a BMP which could result in the discharge in storm water of pollutants that would not be visually detectable, or if storm water comes into contact with soil amendments or other exposed materials or contamination and is allowed to be discharged. Describe the sampling procedure, location, and rationale for obtaining the uncontaminated sample of storm water.

c. Additional Information

(1) The SWPPP shall include a narrative description of pollutant sources and BMPs that cannot be adequately communicated or identified on the site map. In addition, a narrative description of preconstruction control practices (if any) to reduce sediment and other pollutants in storm water discharges shall be included.

(2) The SWPPP shall include an inventory of all materials used and activities performed during construction that have the potential to contribute to the discharge of pollutants other than sediment in storm water. Describe the BMPs selected and the basis for their selection to eliminate or reduce these pollutants in the storm water discharges.

(3) The SWPPP shall include the following information regarding the construction site surface area: the size (in acres or square feet), the runoff coefficient before and after construction, and the percentage that is impervious (e.g., paved, roofed, etc.) before and after construction.

(4) The SWPPP shall include a copy of the NOI, and the Waste Discharge Identification (WDID) number. Should a WDID number not be received from the SWRCB at the time construction commences, the discharger shall include proof of mailing of the NOI, e.g., certified mail receipt, copy of check, express mail receipt, etc.

(5) The SWPPP shall include a construction activity schedule which describes all major activities such as mass grading, paving, lot or parcel

improvements at the site and the proposed time frame to conduct those activities.

(6) The SWPPP shall list the name and telephone number of the qualified person(s) who have been assigned responsibility for prestorm, poststorm, and storm event BMP inspections; and the qualified person(s) assigned responsibility to ensure full compliance with the permit and implementation of all elements of the SWPPP, including the preparation of the annual compliance evaluation and the elimination of all unauthorized discharges.

6. Erosion Control

Erosion control, also referred to as "soil stabilization" is the most effective way to retain soil and sediment on the construction site. The most efficient way to address erosion control is to preserve existing vegetation where feasible, to limit disturbance, and to stabilize and revegetate disturbed areas as soon as possible after grading or construction. Particular attention must be paid to large mass-graded sites where the potential for soil exposure to the erosive effects of rainfall and wind is great. Mass graded construction sites may be exposed for several years while the project is being built out. Thus, there is potential for significant sediment discharge from the site to surface waters.

At a minimum, the discharger/operator must implement an effective combination of erosion and sediment control on all disturbed areas during the rainy season. These disturbed areas include rough graded roadways, slopes, and building pads. Until permanent vegetation is established, soil cover is the most cost-effective and expeditious method to protect soil particles from detachment and transport by rainfall. Temporary soil stabilization can be the single-most important factor in reducing erosion at construction sites. The discharger shall consider measures such as: covering with mulch, temporary seeding, soil stabilizers, binders, fiber rolls or blankets, temporary vegetation, permanent seeding, and a variety of other measures.

The SWPPP shall include a description of the erosion control practices, including a time schedule, to be implemented during construction to minimize erosion on disturbed areas of a construction site. The discharger must consider the full range of erosion control BMPs. The discharger must consider any additional site-specific and seasonal conditions when selecting and implementing appropriate BMPs. The above listed erosion control measures are examples of what should be considered and are not exclusive of new or innovative approaches currently available or being developed.

a. The SWPPP shall include:

(1) An outline of the areas of vegetative soil cover or native vegetation onsite which will remain undisturbed during the construction project.

(2) An outline of all areas of soil disturbance including cut or fill areas which will be stabilized during the rainy season by temporary or permanent erosion control measures, such as seeding, mulch, or blankets, etc.

(3) An outline of the areas of soil disturbance, cut, or fill which will be left exposed during any part of the rainy season, representing areas of potential soil erosion where sediment control BMPs are required to be used during construction.

(4) A proposed schedule for the implementation of erosion control measures.

b. The SWPPP shall include a description of the BMPs and control practices to be used for both temporary and permanent erosion control measures.

c. The SWPPP shall include a description of the BMPs to reduce wind erosion at all times, with particular attention paid to stock-piled materials.

7. Stabilization

(1) All disturbed areas of the construction site must be stabilized. Final stabilization for the purposes of submitting a NOT is satisfied when:

-All soil disturbing activities are completed AND EITHER OF THE TWO FOLLOWING CRITERIA ARE MET:

-A uniform vegetative cover with 70 percent coverage has been established OR:

-equivalent stabilization measures have been employed. These measures include the use of such BMPs as blankets, reinforced channel liners, soil cement, fiber matrices, geotextiles, or other erosion resistant soil coverings or treatments.

(2) Where background native vegetation covers less than 100 percent of the surface, such as in arid areas, the 70 percent coverage criteria is adjusted as follows: If the native vegetation covers 50 percent of the ground surface, 70 percent of 50 percent (.70 X .50=.35) would require 35 percent total uniform surface coverage.

8. Sediment Control

The SWPPP shall include a description or illustration of BMPs which will be implemented to prevent a net increase of sediment load in storm water discharge relative to preconstruction levels. Sediment control BMPs are required at appropriate locations along the site perimeter and at all operational internal inlets to the storm drain system at all times during the rainy season. Sediment control practices may include filtration devices and barriers (such as fiber rolls, silt fence, straw bale barriers, and gravel inlet filters) and/or settling devices (such as sediment traps or basins). Effective filtration devices, barriers, and settling devices shall be selected, installed and maintained properly. A proposed schedule for deployment of sediment control BMPs shall be included in the SWPPP. These are the most basic measures to prevent sediment from leaving the project site and moving into receiving waters. Limited exemptions may be authorized by the RWQCB when work on active areas precludes the use of sediment control BMPs temporarily. Under these conditions, the SWPPP must describe a plan to establish perimeter controls prior to the onset of rain.

During the nonrainy season, the discharger is responsible for ensuring that adequate sediment control materials are available to control sediment discharges at the downgrade perimeter and operational inlets in the event of a predicted storm. The discharger shall consider a full range of sediment controls, in addition to the controls listed above, such as straw bale dikes, earth dikes, brush barriers, drainage swales, check dams, subsurface drain, sandbag dikes, fiber rolls, or other controls. At a minimum, the discharger/operator must implement an effective combination of erosion and sediment control on all disturbed areas during the rainy season.

If the discharger chooses to rely on sediment basins for treatment purposes, sediment basins shall, at a minimum, be designed and maintained as follows:

Option 1: Pursuant to local ordinance for sediment basin design and maintenance, provided that the design efficiency is as protective or more protective of water quality than Option 3.

OR

Option 2: Sediment basin(s), as measured from the bottom of the basin to the principal outlet, shall have at least a capacity equivalent to 3,600 cubic feet of storage per acre draining into the sediment basin. The length of the basin shall be more than twice the width of the basin. The length is determined by measuring the distance between the inlet and the outlet; and the depth must not be less than three feet nor greater than five feet for safety reasons and for maximum efficiency.

OR

Option 3: Sediment basin(s) shall be designed using the standard equation:

$$A_s = 1.2Q/V_s$$

Where: As is the minimum surface area for trapping soil particles of a certain size;.Vs is the settling velocity of the design particle size chosen; and Q=C x I x A where Q is the discharge rate measured in cubic feet per second; C is the runoff coefficient; I is the precipitation intensity for the 10-year, 6-hour rain event and A is the area draining into the sediment basin in acres. The design particle size shall be the smallest soil grain size determined by wet sieve analysis, or the fine silt sized (0.01mm) particle, and the Vs used shall be 100 percent of the calculated settling velocity.

The length is determined by measuring the distance between the inlet and the outlet; the length shall be more than twice the dimension as the width; the depth shall not be less than three feet nor greater than five feet for safety reasons and for maximum efficiency (two feet of storage, two feet of capacity). The basin(s) shall be located on the site where it can be maintained on a year-round basis and shall be maintained on a schedule to retain the two feet of capacity;

OR

Option 4: The use of an equivalent surface area design or equation, provided that the design efficiency is as protective or more protective of water quality than Option 3.

A sediment basin shall have a means for dewatering within 7-calendar days following a storm event. Sediment basins may be fenced if safety (worker or public) is a concern.

The outflow from a sediment basin that discharges into a natural drainage shall be provided with outlet protection to prevent erosion and scour of the embankment and channel.

The discharger must consider any additional site-specific and seasonal conditions when selecting and designing sediment control BMPs. The above listed sediment control measures are examples of what should be considered and are not exclusive of new or innovative approaches currently available or being developed.

The SWPPP shall include a description of the BMPs to reduce the tracking of sediment onto public or private roads at all times. These public and private roads shall be inspected and cleaned as necessary. Road cleaning BMPs shall be discussed in the SWPPP and will not rely on the washing of accumulated sediment or silt into the storm drain system.

9. Non-Storm Water Management

Describe all non-storm water discharges to receiving waters that are proposed for the construction project. Non-storm water discharges should be eliminated or reduced to the extent feasible. Include the locations of such discharges and descriptions of all BMPs designed for the control of pollutants in such discharges. Onetime discharges shall be monitored during the time that such discharges are occurring. A qualified person should be assigned the responsibility for ensuring that no materials other than storm water are discharged in quantities which will have an adverse effect on receiving waters or storm drain systems (consistent with BAT/BCT), and the name and contact number of that person should be included in the SWPPP document.

Discharging sediment-laden water which will cause or contribute to an exceedance of the applicable RWQCB's Basin Plan from a dewatering site or sediment basin into any receiving water or storm drain without filtration or equivalent treatment is prohibited.

10. Post-Construction Storm Water Management

The SWPPP shall include descriptions of the BMPs to reduce pollutants in storm water discharges after all construction phases have been completed at the site (Post-Construction BMPs). Post-Construction BMPs include the minimization of land disturbance, the minimization of impervious surfaces, treatment of storm water runoff using infiltration, detention/retention, biofilter BMPs, use of efficient irrigation systems, ensuring that interior drains are not connected to a storm sewer system, and appropriately designed and constructed energy dissipation devices. These must be consistent with all local post-construction storm water management requirements, policies, and guidelines. The discharger must consider site-specific and seasonal conditions when designing the control practices. Operation and maintenance of control practices after construction is completed shall be addressed, including short-and long-term funding sources and the responsible party.

11. Maintenance, Inspection, and Repair

The SWPPP shall include a discussion of the program to inspect and maintain all BMPs as identified in the site plan or other narrative documents throughout the entire duration of the project. A qualified person will be assigned the responsibility to conduct inspections. The name and telephone number of that person shall be listed in the SWPPP document. Inspections will be performed before and after storm events and once each 24-hour period during extended storm events to identify BMP effectiveness and implement repairs or design changes as soon as feasible depending upon field conditions. Equipment, materials, and workers must be available for rapid response to failures and emergencies. All corrective maintenance to BMPs shall be performed as soon as possible after the conclusion of each storm depending upon worker safety.

For each inspection required above, the discharger shall complete an inspection checklist. At a minimum, an inspection checklist shall include:

a. Inspection date.

b. Weather information: best estimate of beginning of storm event, duration of event, time elapsed since last storm, and approximate amount of rainfall (inches).

c. A description of any inadequate BMPs.

d. If it is possible to safely access during inclement weather, list observations of all BMPs: erosion controls, sediment controls, chemical and waste controls, and non-storm water controls. Otherwise, list result of visual inspection at relevant outfall, discharge point, or downstream location and projected required maintenance activities.

e. Corrective actions required, including any changes to SWPPP necessary and implementation dates.

f. Inspectors name, title, and signature.

The dischargers shall prepare their inspection checklists using the inspection checklist form provided by the SWRCB or RWQCB or on forms that contain the equivalent information.

12. Training

Individuals responsible for SWPPP preparation, implementation, and permit compliance shall be appropriately trained, and the SWPPP shall document all training. This includes those personnel responsible for installation, inspection, maintenance, and repair of BMPs. Those responsible for overseeing, revising, and amending the SWPPP shall also document their training. Training should be both formal and informal, occur on an ongoing basis when it is appropriate and convenient, and should include training/workshops offered by the SWRCB, RWQCB, or other locally recognized agencies or professional organizations.

13. List of Contractors/Subcontractors

The SWPPP shall include a list of names of all contractors, (or subcontractors) and individuals responsible for implementation of the SWPPP. This list should include telephone numbers and addresses. Specific areas of responsibility of each subcontractor and emergency contact numbers should also be included.

14. Other Plans

This SWPPP may incorporate by reference the appropriate elements of other plans required by local, State, or Federal agencies. A copy of any requirements incorporated by reference shall be kept at the construction site.

15. Public Access

The SWPPP shall be provided, upon request, to the RWQCB. The SWPPP is considered a report that shall be available to the public by the RWQCB under section 308(b) of the Clean Water Act.

16. Preparer Certification

The SWPPP and each amendment shall be signed by the landowner (discharger) or his representative and include the date of initial preparation and the date of each amendment.

SECTION B: MONITORING PROGRAM AND REPORTING REQUIREMENTS

1. Required Changes

The RWQCB may require the discharger to conduct additional site inspections, to submit reports and certifications, or perform sampling and analysis.

2. Implementation

a. The requirements of this Section shall be implemented at the time of commencement of construction activity (see also Section A. 2. Implementation Schedule). The discharger is responsible for implementing these requirements until construction activity is complete and the site is stabilized.

b. For ongoing construction activity involving a change in ownership of property covered by this General Permit, the new owner must complete a NOI and implement the requirements of this Section concurrent with the change of ownership. For changes of information, the owner must follow instructions in C. 7. Special Provisions for Construction Activity of the General Permit.

3. Site Inspections

Qualified personnel shall conduct inspections of the construction site prior to anticipated storm events, during extended storm events, and after actual storm events to identify areas contributing to a discharge of storm water associated with construction activity. The name(s) and contact number(s) of the assigned inspection personnel shall be listed in the SWPPP. Pre-storm inspections are to ensure that BMPs are properly installed and maintained; post-storm inspections are to assure that the BMPs have functioned adequately. During extended storm events, inspections shall be required each 24-hour period. Best Management Practices (BMPs) shall be evaluated for adequacy and proper implementation and whether additional BMPs are required in accordance with the terms of the General Permit (see language in Section A. 11. Maintenance, Inspection, and Repair). Implementation of nonstorm water discharge BMPs shall be verified and their effectiveness evaluated. One time discharges of non-storm water shall be inspected when such discharges occur.

4. Compliance Certification

Each discharger or qualified assigned personnel listed by name and contact number in the SWPPP must certify annually that construction activities are in compliance with the requirements of this General Permit and the SWPPP. This Certification shall be based upon the site inspections required in Item 3 of this Section. The certification must be completed by July 1 of each year.

5. Noncompliance Reporting

Dischargers who cannot certify compliance, in accordance with Item 4 of this Section and/or who have had other instances of noncompliance excluding exceedances of water quality standards as defined in section B. 3. Receiving Water Limitations Language, shall notify the appropriate RWQCB within 30 days. Corrective measures should be implemented immediately following discovery that water quality standards were exceeded. The notifications shall identify the noncompliance event, including an initial assessment of any impact caused by the event; describe the actions necessary to achieve compliance; and include a time schedule subject to the modifications by the RWQCB indicating when compliance will be achieved. Noncompliance notifications must be submitted within 30-calendar days of identification of noncompliance.

6. Monitoring Records

Records of all inspections, compliance certifications, and noncompliance reporting must be retained for a period of at least three years from the date generated. With the exception of noncompliance reporting, dischargers are not required to submit these records.

7. Monitoring Program for Sedimentation/Siltation

Dischargers of storm water associated with construction activity that directly enters a water body listed in Attachment 3 shall conduct a sampling and analysis program for the pollutants (sedimentation/siltation or turbidity) causing the impairment. The discharger shall monitor for the applicable parameter. If the water body is listed for sedimentation or siltation, samples should be analyzed for Settleable Solids (ml/l) and Total Suspended Solids (mg/l). Alternatively or in addition, samples may be analyzed for suspended sediment concentration according to ASTM D3977-97. If the water body is listed for turbidity, samples should be analyzed for turbidity (NTU). Discharges that flow through tributaries that are not listed in Attachment 3 or that flow into Municipal Separate Storm Sewer Systems (MS4) are not subject to these sampling and analysis requirements. The sampling and analysis parameters and procedures must be designed to determine whether the BMPs installed and maintained prevent discharges of sediment from contributing to impairment in receiving waters.

Samples shall be collected during the first two hours of discharge from rain events which result in a direct discharge to any water body listed in Attachment 3. Samples shall be collected during daylight hours (sunrise to sunset). Dischargers need not collect more than four (4) samples per month. All samples shall be taken in the receiving waters and shall be representative of the prevailing conditions of the water bodies. Samples shall be collected from safely accessible locations upstream of the construction site discharge and immediately downstream from the last point of discharge.

For laboratory analysis, all sampling, sample preservation, and analyses must be conducted according to test procedures under 40 CFR Part 136. Field samples shall be collected and analyzed according to the specifications of the manufacturer of the sampling devices employed. Portable meters shall be calibrated according to manufacturer's specification. All field and/or laboratory analytical data shall be kept in the SWPPP document, which is to remain at the construction site at all times until a Notice of Termination has been submitted and approved.

8. Monitoring Program for Pollutants Not Visually Detectable in Storm Water

A sampling and analysis program shall be developed and conducted for pollutants which are not visually detectable in storm water discharges, which are or should be known to occur on the construction site, and which could cause or contribute to an exceedance of water quality objectives in the receiving water. Pollutants that should be considered for inclusion in this sampling and analysis program are those identified in Sections A.5.b. and A.5.c.

Construction materials and compounds that are not stored in water-tight containers under a water-tight roof or inside a building are examples of materials for which the discharger may have to implement sampling and analysis procedures. The goal of the sampling and analysis is to determine whether the BMPs employed and maintained on site are effective in preventing the potential pollutants from coming in contact with storm water and causing or contributing to an exceedance of water quality objectives in the receiving waters. Examples of construction sites that may require sampling and analysis include: sites that are known to have contaminants spilled or spread on the ground; sites where construction practices include the application of soil amendments, such as gypsum, which can increase the pH of the runoff; or sites having uncovered stockpiles of material exposed to storm water. Visual observations before, during, and after storm events may trigger the requirement to collect samples. Any breach, malfunction, leakage, or spill observed which could result in the discharge of pollutants to surface waters that *would* not be visually detectable in storm water shall trigger the collection of a sample of discharge. Samples shall be collected at all discharge locations which drain the areas identified by the visual observations and which can be safely accessed. For sites where sampling and analysis is required, personnel trained in water quality sampling procedures shall collect storm water samples. A sufficiently large sample of storm water that has not come in contact with the disturbed soil or the materials stored or used on-site (uncontaminated sample) shall be collected for comparison with the discharge sample. Samples shall be collected during the first two hours of discharge from rain events that occur during daylight hours and which generate runoff.

The uncontaminated sample shall be compared to the samples of discharge using field analysis or through laboratory analysis. Analyses may include, but are not limited to, indicator parameters such as: pH, specific conductance, dissolved oxygen, conductivity, salinity, and TDS.

For laboratory analysis, all sampling, sample preservation, and analyses must be conducted according to test procedures under 40 CFR Part 136. Field discharge samples shall be collected and analyzed according to the specifications of the manufacturer of the sampling devices employed. Portable meters shall be calibrated according to manufacturer's specification. All field and/or analytical data shall be kept in the SWPPP document, which is to remain at the construction site at all times until a *Notice of* Termination has been submitted and approved.

SECTION C: STANDARD PROVISIONS FOR CONSTRUCTION ACTIVITY

1. Duty to Comply

The discharger must comply with all of the conditions of this General Permit. Any permit noncompliance constitutes a violation of the Clean Water Act (CWA) and the Porter-Cologne Water Quality Control Act and is grounds for enforcement action and/or removal from General Permit coverage.

The discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the CWA for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if this General Permit has not yet been modified to incorporate the requirement.

2. General Permit Actions

This General Permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the discharger for a General Permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not annul any General Permit condition.

If any toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is promulgated under Section 307(a) of the CWA for a toxic pollutant which is present in the discharge and that standard or prohibition is more stringent than any limitation on the pollutant in this General Permit, this General Permit shall be modified or revoked and reissued to conform to the toxic effluent standard or prohibition and the dischargers so notified.

3. Need to Halt or Reduce Activity Not a Defense

   It shall not be a defense for a discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this General Permit.

4. Duty to Mitigate

   The discharger shall take all responsible steps to minimize or prevent any discharge in violation of this General Permit, which has a reasonable likelihood of adversely affecting human health or the environment.

5. Proper Operation and Maintenance

   The discharger shall at all times properly operate and maintain any facilities and systems of treatment and control (and related appurtenances) which are installed or used by the discharger to achieve compliance with the conditions of this General Permit and with the requirements of Storm Water Pollution Prevention Plans (SWPPP). Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. Proper operation and maintenance may require the operation of backup or auxiliary facilities or similar systems installed by a discharger when necessary to achieve compliance with the conditions of this General Permit.

6. Property Rights

   This General Permit does not convey any property rights of any sort or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor does it authorize any infringement of Federal, State, or local laws or regulations.

7. Duty to Provide Information

   The discharger shall furnish the RWQCB, State Water Resources Control Board, or USEPA, within a reasonable time, any requested information to determine compliance with this General Permit. The discharger shall also furnish, upon request, copies of records required to be kept by this General Permit.

8. Inspection and Entry

   The discharger shall allow the RWQCB, SWRCB, USEPA, and/or, in the case of construction sites which discharge through a municipal separate storm sewer, an authorized representative of the municipal operator of the separate storm sewer system receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

a. Enter upon the discharger's premises at reasonable times where a regulated construction activity is being conducted or where records must be kept under the conditions of this General Permit;

b. Access and copy at reasonable times any records that must be kept under the conditions of this General Permit;

c. Inspect at reasonable times the complete construction site, including any off-site staging areas or material storage areas, and the erosion/sediment controls; and

d. Sample or monitor at reasonable times for the purpose of ensuring General Permit compliance.

9. Signatory Requirements

a. All Notice of Intents (NOIs), Notice of Terminations (NOTs), SWPPPs, certifications, and reports prepared in accordance with this Order submitted to the SWRCB shall be signed as follows:

(1) For a corporation: by a responsible corporate officer. For the purpose of this Section, a responsible corporate officer means: (a) a president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or (b) the manager of the construction activity if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

(2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

(3) For a municipality, State, Federal, or other public agency: by either a principal executive officer, ranking elected official, or duly authorized representative. The principal executive officer of a Federal agency includes the chief executive officer of the agency or the senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrator of USEPA).

b. All SWPPPs, reports, certifications, or other information required by the General Permit and/or requested by the RWQCB, SWRCB, USEPA, or the local storm water management agency shall be signed by a person described above or by a duly authorized representative. A person is a duly authorized representative if:

(1) The authorization is made in writing by a person described above and retained as part of the SWPPP; or

(2) The authorization specifies either an individual or a position having responsibility for the overall operation of the construction activity, such as the position of manager, operator, superintendent, or position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position).

c. If an authorization is no longer accurate because a different individual or position has responsibility for the overall operation of the construction activity, a new authorization must be attached to the SWPPP prior to submittal of any reports, information, or certifications to be signed by the authorized representative.

10. Certification

Any person signing documents under Section C, Provision 9 above, shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is, true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

11. Anticipated Noncompliance

The discharger will give advance notice to the RWQCB and local storm water management agency of any planned changes in the construction activity which may result in noncompliance with General Permit requirements.

12. Penalties for Falsification of Reports

Section 309(c)(4) of the CWA provides that any person who knowingly makes any false material statement, representation, or certification in any record or other document submitted or required to be maintained under this General Permit, including reports of compliance or noncompliance shall upon conviction, be punished by a fine of not more than $10,000 or by imprisonment for not more than two years or by both.

13. Oil and Hazardous Substance Liability

Nothing in this General Permit shall be construed to preclude the institution of any legal action or relieve the discharger from any responsibilities, liabilities, or penalties to which the discharger is or may be subject to under Section 311 of the CWA.

14. Severability

The provisions of this General Permit are severable; and, if any provision of this General Permit or the application of any provision of this General Permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this General Permit shall not be affected thereby.

15. Reopener Clause

This General Permit may be modified, revoked and reissued, or terminated for cause due to promulgation of amended regulations, receipt of USEPA guidance concerning regulated activities, judicial decision, or in accordance with 40 Code of Federal Regulations (CFR) 122.62, 122.63, 122.64, and 124.5.

16. Penalties for Violations of Permit Conditions

a. Section 309 of the CWA provides significant penalties for any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the CWA or any permit condition or limitation implementing any such section in a permit issued under Section 402. Any person who violates any permit condition of this General Permit is subject to a civil penalty not to exceed $27,500 per calendar day of such violation, as well as any other appropriate sanction provided by Section 309 of the CWA.

b. The Porter-Cologne Water Quality Control Act also provides for civil and criminal penalties which in some cases are greater than those under the CWA.

17. Availability

A copy of this General Permit shall be maintained at the construction site during construction activity and be available to operating personnel.

18. Transfers

This General Permit is not transferable. A new owner of an ongoing construction activity must submit a NOI in accordance with the requirements of this General Permit to be authorized to discharge under this General Permit. An owner who sells property covered by this General Permit shall inform the new owner of the duty to file a NOI and shall provide the new owner with a copy of this General Permit.

19. Continuation of Expired Permit

This General Permit continues in force and effect until a new General Permit is issued or the SWRCB rescinds this General Permit. Only those dischargers authorized to discharge under the expiring General Permit are covered by the continued General Permit.

SWRCB AND RWQCB CONTACT LIST

Please see Storm Water Contacts at
http://www.swrcb.ca.gov/stormwtr/contact.html

NOTICE OF INTENT (NOI) TO COMPLY WITH THE TERMS OF THE GENERAL PERMIT TO DISCHARGE STORM WATER ASSOCIATED WITH CONSTRUCTION ACTIVITY

GENERAL INSTRUCTIONS

Who Must Submit

Discharges of storm water associated with construction that results in the disturbance of one acre or more of land must apply for coverage under the General Construction Activities Storm Water Permit (General Permit). Construction activity which is a part of a larger common area of development or sale must also be permitted. (For example, if 4 acres of a 20-acre subdivision is disturbed by construction activities, and the remaining 16 acres is to be developed at a future date, the property owner must obtain a General Storm Water Permit for the 4-acre project). Construction activity includes, but is not limited to: clearing, grading, demolition, excavation, construction of new structures, and reconstruction of existing facilities involving removal and replacement that results in soil disturbance. This includes construction access roads, staging areas, storage areas, stockpiles, and any off-site areas which receive run-off from the construction project such as discharge points into a receiving water. Construction activity does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of the facility.

The owner of the land where the construction activity is occurring is responsible for obtaining a permit. Owners may obtain coverage under the General Permit by filing a NOI in accordance with the following instructions. Coverage for construction activity conducted on easements (e.g., pipeline construction) or on nearby properties by agreement or permission, or by an owner or lessee of a mineral estate (oil, gas, geothermal, aggregate, precious metals, and/or industrial minerals) entitled to conduct the activities, shall be obtained by the entity responsible for the construction activity. Linear construction projects which will have construction activity occurring in one or more than one Region should contact the State Water Resources Control Board at the number listed below prior to submitting an NOI application for specific information related to the use of the NOI form.

Construction Activity Not Covered By This General Permit

Storm water discharges in the Lake Tahoe Hydrologic Unit will be regulated by a separate permit(s) adopted by the California Regional Water Quality Control Board, Lahontan Region, and will not be covered under the State Water Resources Control Board's (SWRCB) General Permit. Storm water discharges on Indian Lands will be regulated by the U.S. Environmental Protection Agency.

Where to Apply

The NOI form, vicinity map, and appropriate fee must be mailed to the SWRCB at the following address:

State Water Resources Control Board
Division of Water Quality
Attn: Storm Water Permit Unit
P.O. Box 1977
Sacramento, CA 95812-1977

When to Apply

Property owners proposing to conduct construction activities subject to this General Permit must file a Notice of Intent prior to the commencement of construction activity.

Fees

The annual fee is $700 for all construction sites submitting an NOI. Checks should be made payable to: SWRCB.

Completing the Notice of Intent (NOI)

The submittal to obtain coverage under the General Permit must include a completed NOI Form (Notice of Intent, attached), a vicinity map, and the appropriate annual fee. The NOI must be completely and accurately filled out; the vicinity map and annual fee must be included with the NOI or the submittal is considered incomplete and will be rejected. A construction site is considered to be covered by the General Permit upon filing a complete NOI submittal, and implementation of a defensible Storm Water Pollution Prevention Plan (SWPPP). Upon receipt of a complete NOI submittal, each discharger will be sent a receipt letter containing the waste discharger's identification (WDID) number.

Questions?

If you have any questions on completing the NOI please call the SWRCB at (916) 341-5537.

NOI-LINE-BY-LINE INSTRUCTIONS

Please type or print when completing the NOI Form and vicinity map.

SECTION I--NOI STATUS

Mark one of the two boxes at the top portion of the NOI. Check box 1 if the NOI is being completed for new construction. Check box 2 if the NOI is being submitted to report changes for a construction site already covered by the General Permit. An example of a change that warrants a resubmittal of the NOI is a change of total area of the construction site. The permit is non-transferable, a change of ownership requires a Notice of Termination (NOT) submittal and a new NOI. Complete only those portions of the NOI that apply to the changes (the NOI must always be signed). If box 2 is checked, the WDID number must be included.

SECTION II--PROPERTY OWNER

Enter the construction site owner's official or legal name and address; contact person (if other than owner), title, and telephone number.

SECTION III--DEVELOPER / CONTRACTOR INFORMATION

Enter the name of the developer's (or general contractor's) official or legal name, address, contact person, title, and telephone number. The contact person should be someone who is familiar with the construction site and is responsible for compliance and oversight of the general permit.

SECTION IV-CONSTRUCTION PROJECT INFORMATION

Enter the project name, site address, county, city, (or nearest city if construction is occurring in an unincorporated area), zip code, and telephone number (if any) of the construction site. Include an emergency contact telephone or pager number. Construction site information should include latitude and longitude designations, tract numbers, and/or mile post markers, if applicable. The site contact person should be someone who is familiar with the project, site plans, SWPPP, and monitoring program. All NOIs must be accompanied by a vicinity map.

Part A: Enter the total size in acres of all areas associated with construction activity, including all access roads.

Part B: Enter the total size in acres of the area to be disturbed by construction activity and the percentage of the area listed in Part A above that this represents.

Part C: Enter the percentage of the site that is impervious (areas where water cannot soak into the ground, such as concrete, asphalt, rooftops, etc.) before and after construction.

Part D: Include tract numbers, if available.

Part E: Enter the mile post marker number at the project site location.

Part F: Indicate whether the construction site is part of a larger common plan of development or sale. For example, if the construction activity is occurring on a two-acre site which is within a development that is one acre or greater, answer yes.

Part G: Enter the name of the development (e.g. "Quail Ridge Subdivision", "Orange Valley Estates", etc.).

Part H: Indicate when construction will begin (month, day, year). When a NOI is being submitted due to a change in ownership, the commencement date should be the date the new ownership took effect.

Part I: Indicate the percentage of the total project area to be mass graded.

Part J: Enter the estimated completion dates for the mass grading activities and for the project completion.

Part K: Indicate the type(s) of construction taking place. For example, "Transportation" should be checked for the construction of roads; "Utility" should be checked for installation of sewer, electric, or telephone systems. Include a description of the major construction activities, (e.g., 20 single family homes, a supermarket, an office building, a factory, etc.)

SECTION V--BILLING ADDRESS

To continue coverage under the General Permit, the annual fee must be paid. Indicate where the annual fee invoice should be mailed by checking one of the following boxes:

Owner: sent to the owners address as it appears in Section II.

Developer/Contractor: sent to the developer's address as it appears in Section III.

Other: sent to a different address and enter that address in the spaces provided.

SECTION VI--REGULATORY STATUS

Indicate whether or not the site is subject to local erosion/sediment control ordinances. Indicate whether the erosion/sediment control plan designed to comply with the ordinance addresses the construction of infrastructure and structures in addition to grading. Identify the name and telephone number of the local agency, if applicable.

SECTION VII--RECEIVING WATER INFORMATION

Part A: Indicate whether the storm water runoff from the construction site discharges indirectly to waters of the United States, directly to waters of the United States, or to a separate storm drain system.

Indirect discharges include discharges that may flow overland across adjacent properties or rights-of-way prior to discharging into waters of the United States.

Enter the name of the owner/operator of the relevant storm drain system, if applicable. Storm water discharges directly to waters of the United States will typically have an outfall structure directly from the facility to a river, lake, creek, stream, bay, ocean, etc. Discharges to separate storm sewer systems are those that discharge to a collection system operated by municipalities, flood control districts, utilities, or similar entities.

Part B: Enter the name of the receiving water. Regardless of point of discharge, the owner must determine the receiving water for the construction site's storm water discharge. Enter the name of the receiving water.

SECTION VIII--IMPLEMENTATION OF NPDES PERMIT REQUIREMENTS

Part A: Indicate the status of the SWPPP, date prepared, or availability for review. Also indicate if a tentative construction schedule has been included in the SWPPP (the inclusion of a construction activity schedule is a mandatory SWPPP requirement).

Part B: Provide information concerning the status of the development of a monitoring program, a component of the SWPPP which outlines an inspection and maintenance schedule for the proposed Best Management Practices (BMPs). Provide name and phone number of program preparer.

Part C: Provide the name and phone numbers of the responsible party or parties designated to insure compliance with all elements of the General Permit and SWPPP.

SECTION IX--VICINITY MAP AND FEE

Provide a “to scale” or "to approximate scale" drawing of the construction site and the immediate surrounding area. Whenever possible, limit the map to an 8.5” x 11’ or 11" x 17" sheet of paper. At a minimum, the map must show the site perimeter, the geographic features surrounding the site, and general topography, and a north arrow. The map must also include the location of the construction project in relation to named streets, roads, intersections, or landmarks. A NOI containing a map which does not clearly indicate the location of the construction project will be rejected. Do not submit blueprints unless they meet the above referenced size limits.

SECTION X--CERTIFICATIONS

This section must be completed by the owner or signatory agent of the construction site*. The certification provides assurances that the NOI and vicinity map were completed in an accurate and complete fashion and with the knowledge that penalties exist for providing false information. Certification also requires the owner to comply with the provisions in the General Permit.

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* For a corporation: a responsible corporate officer (or authorized individual). For a partnership or sole proprietorship: a general partner or the proprietor, respectively. For a municipality, State, Federal, or other public agency: either a principal executive officer, ranking elected official, or duly authorized representative.

Attachment 2

State Water Resources Control Board

NOTICE OF INTENT

TO COMPLY WITH THE TERMS OF THE
GENERAL PERMIT TO DISCHARGE STORM WATER
ASSOCIATED WITH CONSTRUCTION ACTIVITY (WQ ORDER No. 99-08-DWQ)

I. NOI STATUS (SEE INSTRUCTIONS)

MARK ONLY ONE ITEM 1. ☐ New Construction 2. ☐ Change of Information for WDID# ______

II. PROPERTY OWNER

Name	Contact Person			
Mailing Address	Title			
City	State	Zip	Phone ( ) --	

III. DEVELOPER/CONTRACTOR INFORMATION

Developer/Contractor	Contact Person			
Mailing Address	Title			
City	State	Zip	Phone ( ) --	

IV. CONSTRUCTION PROJECT INFORMATION

Site/Project Name	Site Contact Person			
Physical Address/Location	Latitude _____ °	Longitude _____ °	County	
City (or nearest City)	Zip	Site Phone Number ( ) --	Emergency Phone Number ( ) --	

A. Total size of construction site area: __________ Acres B. Total area to be disturbed: __________ Acres (% of total ______)	C. Percent of site imperviousness (including rooftops): Before Construction: ________% After Construction: ________%	D. Tract Number(s): ________, ________ E. Mile Post Marker: ________

F. Is the construction site part of a larger common plan of development or sale?

☐ YES ☐ NO

G. Name of plan or development:

H. Construction commencement date: ____/____/____

I. % of site to be mass graded: ________

J. Projected construction dates:

Complete grading: ____/____/____ Complete project: ____/____/____

K. Type of Construction (Check all that apply):

1. ☐ Residential 2. ☐ Commercial 3. ☐ Industrial 4.☐ Reconstruction 5.☐ Transportation

6. ☐ Utility Description: ____________ 7.☐ Other (Please List): ____________

V. BILLING INFORMATION

SEND BILL TO: ☐ OWNER (as in II. above)	Name	Contact Person	
☐ DEVELOPER (as in III. above)	Mailing Address	Phone/Fax	
☐ OTHER (enter information at right)	City	State	Zip

VI. REGULATORY STATUS

A. Has a local agency approved a required erosion/sediment control plan?............ ☐ YES ☐ NO

Does the erosion/sediment control plan address construction activities such as infrastructure and structures?............ ☐ YES ☐ NO

Name of local agency: ______________________ Phone: ( ) -- ____________

B. Is this project or any part thereof, subject to conditions imposed under a CWA Section 404 permit of 401 Water Quality Certification?............ ☐ YES☐ NO

If yes, provide details: ______________________

VII. RECEIVING WATER INFORMATION

A. Does the storm water runoff from the construction site discharge to (Check all that apply):

1. ☐ **Indirectly to waters of the U.S.**
2. ☐ **Storm drain system - Enter owner's name:______________________**
3. ☐ **Directly to waters of U.S. (e.g. , river, lake, creek, stream, bay, ocean, etc.)**

B. Name of receiving water: (river, lake, creek, stream, bay, ocean): ______________________

VIII. IMPLEMENTATION OF NPDES PERMIT REQUIREMENTS

A. STORM WATER POLLUTION PREVENTION PLAN (SWPPP) (check one)

☐ A SWPPP has been prepared for this facility and is available for review: Date Prepared: ____/____/____ Date Amended: ____/____/____

☐ A SWPPP will be prepared and ready for review by (enter date): ____/____/____

☐ A tentative schedule has been included in the SWPPP for activities such as grading, street construction, home construction, etc.

B. MONITORING PROGRAM

☐ A monitoring and maintenance schedule has been developed that includes inspection of the construction BMPs before anticipated storm events and after actual storm events and is available for review.

If checked above: A qualified person has been assigned responsibility for pre-storm and post-storm BMP inspections to identify effectiveness and necessary repairs or design changes............ ☐ YES☐ NO

Name: ______________________ Phone: ( ) -- ____________

C. PERMIT COMPLIANCE RESPONSIBILITY

A qualified person has been assigned responsibility to ensure full compliance with the Permit, and to implement all elements of the Storm Water Pollution Prevention Plan including:

1. Preparing an annual compliance evaluation............ ☐ YES ☐ NO

Name: ______________________ Phone: ( ) -- ____________

2. Eliminating all unauthorized discharges............ ☐ YES ☐ NO

IX. VICINITY MAP AND FEE (must show site location in relation to nearest named streets, intersections, etc.)

Have you included a vicinity map with this submittal?............ ☐ YES ☐ NO

Have you included payment of the annual fee with this submittal?............ ☐ YES ☐ NO

X. CERTIFICATIONS

"I certify under penalty of law that this document and all attachments were prepared under my direction and supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment. In addition, I certify that the provisions of the permit, including the development and implementation of a Storm Water Pollution Prevention Plan and a Monitoring Program Plan will be complied with."

Printed Name: ______________________

Signature: ______________________ **Date:** ____________

Title: ______________________

ATTACHMENT 3

303d Listed Water Bodies for Sedimentation

REGION	WATER BODY NAME	CODE	POLLUTANT
1	MATTOLE RIVER	1100	Sedimentation/Siltation
1	TRINITY RIVER, SOUTH FORK	1100	Sedimentation/Siltation
1	REDWOOD CREEK	1100	Sedimentation/Siltation
1	MAD RIVER	1100	Sedimentation/Siltation
1	ELK RIVER	1100	Sedimentation/Siltation
1	EEL RIVER, SOUTH FORK	1100	Sedimentation/Siltation
1	EEL RIVER, NORTH FORK	1100	Sedimentation/Siltation
1	TRINITY RIVER	1100	Sedimentation/Siltation
1	EEL RIVER, MIDDLE FORK	1100	Sedimentation/Siltation
1	MAD RIVER	2500	Turbidity
1	TEN MILE RIVER	1100	Sedimentation/Siltation
1	NOYO RIVER	1100	Sedimentation/Siltation
1	BIG RIVER	1100	Sedimentation/Siltation
1	ALBION RIVER	1100	Sedimentation/Siltation
1	NAVARRO RIVER	1100	Sedimentation/Siltation
1	GARCIA RIVER	1100	Sedimentation/Siltation
1	GUALALA RIVER	1100	Sedimentation/Siltation
1	RUSSIAN RIVER	1100	Sedimentation/Siltation
1	TOMKI CREEK	1100	Sedimentation/Siltation
1	VAN DUZEN RIVER	1100	Sedimentation/Siltation
1	EEL RIVER DELTA	1100	Sedimentation/Siltation
1	EEL RIVER, MIDDLE MAIN FORK	1100	Sedimentation/Siltation
1	ESTERO AMERICANO	1100	Sedimentation/Siltation
1	NAVARRO RIVER DELTA	1100	Sedimentation/Siltation
1	EEL RIVER, UPPER MAIN FORK	1100	Sedimentation/Siltation
1	FRESHWATER CREEK	1100	Sedimentation/Siltation
1	SCOTT RIVER	1100	Sedimentation/Siltation
2	TOMALES BAY	1100	Sedimentation/Siltation
2	NAPA RIVER	1100	Sedimentation/Siltation
2	SONOMA CREEK	1100	Sedimentation/Siltation
2	PETALUMA RIVER	1100	Sedimentation/Siltation
2	LAGUNITAS CREEK	1100	Sedimentation/Siltation
2	WALKER CREEK	1100	Sedimentation/Siltation
2	SAN GREGORIO CREEK	1100	Sedimentation/Siltation

2	SAN FRANCISQUITO CREEK	1100	Sedimentation/Siltation
2	PESCADERO CREEK (REG 2)	1100	Sedimentation/Siltation
2	BUTANO CREEK	1100	Sedimentation/Siltation
3	MORRO BAY	1100	Sedimentation/Siltation
3	SAN LORENZO RIVER ESTUARY	1100	Sedimentation/Siltation
3	SHINGLE MILL CREEK	1100	Sedimentation/Siltation
3	MOSS LANDING HARBOR	1100	Sedimentation/Siltation
3	WATSONVILLE SLOUGH	1100	Sedimentation/Siltation
3	SAN LORENZO RIVER	1100	Sedimentation/Siltation
3	ELKHORN SLOUGH	1100	Sedimentation/Siltation
3	SALINAS RIVER LAGOON (NORTH)	1100	Sedimentation/Siltation
3	GOLETA SLOUGH/ESTUARY	1100	Sedimentation/Siltation
3	CARPINTERIA MARSH (EL ESTERO MARSH)	1100	Sedimentation/Siltation
3	LOMPICO CREEK	1100	Sedimentation/Siltation
3	MORO COJO SLOUGH	1100	Sedimentation/Siltation
3	VALENCIA CREEK	1100	Sedimentation/Siltation
3	PAJARO RIVER	1100	Sedimentation/Siltation
3	RIDER GULCH CREEK	1100	Sedimentation/Siltation
3	LLAGAS CREEK	1100	Sedimentation/Siltation
3	SAN BENITO RIVER	1100	Sedimentation/Siltation
3	SALINAS RIVER	1100	Sedimentation/Siltation
3	CHORRO CREEK	1100	Sedimentation/Siltation
3	LOS OSOS CREEK	1100	Sedimentation/Siltation
3	SANTA YNEZ RIVER	1100	Sedimentation/Siltation
3	SAN ANTONIO CREEK (SANTA BARBARA COUNTY)	1100	Sedimentation/Siltation
3	CARBONERA CREEK	1100	Sedimentation/Siltation
3	SOQUEL LAGOON	1100	Sedimentation/Siltation
3	APTOS CREEK	1100	Sedimentation/Siltation
4	MUGU LAGOON	1100	Sedimentation/Siltation
5	HUMBUG CREEK	1100	Sedimentation/Siltation
5	PANOCHE CREEK	1100	Sedimentation/Siltation
5	FALL RIVER (PIT)	1100	Sedimentation/Siltation
6	BEAR CREEK (R6)	1100	Sedimentation/Siltation
6	MILL CREEK (3)	1100	Sedimentation/Siltation
6	HORSESHOE LAKE (2)	1100	Sedimentation/Siltation
6	BRIDGEPORT RES	1100	Sedimentation/Siltation
6	TOPAZ LAKE	1100	Sedimentation/Siltation
6	LAKE TAHOE	1100	Sedimentation/Siltation

6	PINE CREEK (2)	1100	Sedimentation/Siltation
6	TRUCKEE RIVER	1100	Sedimentation/Siltation
6	CLEARWATER CREEK	1100	Sedimentation/Siltation
6	GRAY CREEK (R6)	1100	Sedimentation/Siltation
6	WARD CREEK	1100	Sedimentation/Siltation
6	BLACKWOOD CREEK	1100	Sedimentation/Siltation
6	GOODALE CREEK	1100	Sedimentation/Siltation
6	EAST WALKER RIVER	1100	Sedimentation/Siltation
6	HEAVENLY VALLEY CREEK	1100	Sedimentation/Siltation
6	WOLF CREEK (1)	1100	Sedimentation/Siltation
6	WEST WALKER RIVER	1100	Sedimentation/Siltation
6	HOT SPRINGS CANYON CREEK	1100	Sedimentation/Siltation
6	BRONCO CREEK	1100	Sedimentation/Siltation
6	SQUAW CREEK	1100	Sedimentation/Siltation
7	IMPERIAL VALLEY DRAINS	1100	Sedimentation/Siltation
7	NEW RIVER (R7)	1100	Sedimentation/Siltation
7	ALAMO RIVER	1100	Sedimentation/Siltation
8	SAN DIEGO CREEK, REACH 1	1100	Sedimentation/Siltation
8	RATHBONE (RATHBUN) CREEK	1100	Sedimentation/Siltation
8	SAN DIEGO CREEK, REACH 2	1100	Sedimentation/Siltation
8	UPPER NEWPORT BAY ECOLOGICAL RESERVE	1100	Sedimentation/Siltation
8	BIG BEAR LAKE	1100	Sedimentation/Siltation
8	ELSINORE, LAKE	1100	Sedimentation/Siltation
9	SAN ELIJO LAGOON	1100	Sedimentation/Siltation
9	LOS PENASQUITOS LAGOON	1100	Sedimentation/Siltation
9	AGUA HEDIONDA LAGOON	1100	Sedimentation/Siltation
9	BUENA VISTA LAGOON	1100	Sedimentation/Siltation

NEW OWNER INFORMATION AND CHANGE OF INFORMATION (COI) FORM FOR THE GENERAL CONSTRUCTION PERMIT NO. CAS000002

Owners Name: ______________________ Date: ____________________

WDID No.: ______________________ Date of Last NOI Change: ____________________

Prepared By: ______________________ Signature of Preparer: ______________________________________

	Area Transferred (acres)[1] column 1	Area Remaining (acres)[2] column 2	Lot/Tract Numbers Transferred	Contact Person and Company Name of NewOwner(s)	Address(es) of the New Owner(s)	Phone # of New Owner	Is Const/Post Construction Complete? Yes/No	Date of Ownership Transfer
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

[1] Use approximate area (in acres) if no exact figure is available.

[2] Calculate running total in this column as follows:

Enter in column 2, line 1, the area from NOI minus the area in column 1.

Enter in column 2, line 2, the area in column 2, line 1, minus the area in line 2, column 1.

Enter in column 2, line 3, the area in column 2, line 2, minus the area in line 3, column 1, and so forth.

Attachment G

Program for Maintenance, Inspection, and Repair of Construction Site BMPs

The contractor shall use the following guidelines for maintenance, inspection, and repair of BMPs identified in the SWPPP

BEST MANAGEMENT PRACTICES (BMPs)	INSPECTION FREQUENCY (all controls)	MAINTENANCE/REPAIR PROGRAM
TEMPORARY EROSION CONTROL BMPs		
EC-1, Scheduling	Monthly Pre, post and interim Storm events	■ Review project schedule. Amend to show updated information or changes from weather, contractors or progress.
EC-2, Preservation of Existing Vegetation	Monthly Pre, post and interim Storm events	■ Repair or replace damaged vegetation
EC-3, Hydraulic Mulch	Monthly Pre, post and interim Storm events	■ Reapply as necessary; spray from two different angles to minimize 'shadowing'
EC-4, Hydroseed	Monthly Pre, post and interim Storm events	■ Reapply as necessary; observe for vegetation establishment. Multiple applications may be needed.
EC-5, Soil Binders	Monthly Pre, post and interim Storm events	■ Reapply as needed ■ Reapply prior to storm event
EC-7, Geotextiles and Mats	Monthly Pre, post and interim Storm events	■ Replace or repair as needed ■ Insure preparation of soil is adequate and stapling pattern is sufficient.
TEMPORARY SEDIMENT CONTROL BMPs		
SE-1, Silt Fence	Monthly Pre, post and interim Storm events	■ Repair or replace as needed ■ Repair and cleanout or replace prior to storm event
SE-4, Check Dam	Monthly Pre, post and interim Storm events	■ Repair washouts along sides and extend to ensure water flows over top of check ■ Repair or cleanout sediment prior to storm events
SE-5, Fiber Rolls	Monthly Pre, post and interim Storm events	■ Repair or replace as needed ■ Repair, cleanout or replace prior to storm event
WIND EROSION CONTROL BMPs		
WE-1, Wind Erosion Control	Monthly Pre, post and interim Storm events	■ Check applicable areas to ensure proper coverage; reapply as needed
TRACKING CONTROL BMPs		
TR-1, Stabilized Construction Entrance/Exit	Monthly Pre, post and interim Storm events	■ Clean or replace or top dress as needed ■ Clean or replace prior to storm event

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The contractor shall use the following guidelines for maintenance, inspection, and repair of BMPs identified in the SWPPP

BEST MANAGEMENT PRACTICES (BMPs)	INSPECTION FREQUENCY (all controls)	MAINTENANCE/REPAIR PROGRAM
TR-2, Stabilized Construction Roadway	Monthly Pre, post and interim Storm events	■ Clean, replace or top dress as needed
NON-STORM WATER MANAGEMENT BMPs		
NS-1, Water Conservation Practices	Monthly Pre, post and interim Storm events	■ Keep watering equipment in good condition
NS-6, Illicit Connection/ Discharge	Preconstruction, Monthly and Pre, post and interim storm events	■ Contain any material present ■ Remove and properly dispose of material
NS-9, Vehicle and Equipment Fueling NS-10, Vehicle and Equipment Maintenance	Monthly Pre, post and interim Storm events	■ Observe daily for leaks and spill during activity ■ Keep cleanup materials near designated areas ■ Remove vehicles in which leaks cannot be repaired ■ Replace drip pans or plastic as needed
NS-12, Concrete Curing NS-13, Concrete Finishing	Monthly Pre, post and interim Storm events	■ Observe daily for leaks, spills and containment during activity ■ Keep cleanup materials near activity ■ Contain, cleanup and properly dispose of material regularly /as needed
WASTE MANAGEMENT AND MATERIALS POLLUTION CONTROL BMPs		
WM-1, Material Delivery and Storage	Monthly Pre, post and interim Storm events	■ Repair or replace storage area as needed ■ Keep containment area free of water and spills
WM-2, Material Use	Monthly Pre, post and interim Storm events	■ Spot check employees' material usage
WM-3, Stockpile Management	Monthly Pre, post and interim Storm events	■ Repair or replace as needed ■ Repair or replace prior to storm
WM-4, Spill Prevention and Control	Monthly Pre, post and interim Storm events	■ Verify spill cleanup materials are located near storage areas and delivery locations
WM-5, Solid Waste Management	Monthly Pre, post and interim Storm events	■ Remove waste when containers are full ■ Train employees on proper disposal of litter
WM-6, Hazardous Waste Management	Monthly Pre, post and interim Storm events	■ Regularly collect material for disposal and removal from site ■ Verify spill cleanup material is nearby and in stock
WM-8, Concrete Waste Management	Monthly Pre, post and interim Storm events	■ Replace concrete washout pits as needed ■ Dispose of waste properly

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The contractor shall use the following guidelines for maintenance, inspection, and repair of BMPs identified in the SWPPP

BEST MANAGEMENT PRACTICES (BMPs)	INSPECTION FREQUENCY (all controls)	MAINTENANCE/REPAIR PROGRAM
WM-9, Sanitary/Septic Waste Management	Monthly Pre, post and interim Storm events	■ Pick up and dispose of sanitary waste spills promptly ■ Regularly maintain facility with certified contractor
WM-10, Liquid Waste Management	Monthly Pre, post and interim Storm events	■ Observe activity and presence of controls daily during activity ■ Repair BMPs as needed ■ Contain, remove and dispose of materials as needed

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Attachment H

Storm Water Quality Construction Site Inspection Checklist

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SWPPP Inspection Checklist
Lucerne Solar

WDID#:____________________

Inspection Type (circle): Routine Pre Interim Post	Date: Time:	

No.	Inspection Question	Yes	No	Corrective action taken and date
1	Is tracking control properly installed, maintained, and effectively preventing tracking off site?			
2	Are sediment control BMPs properly installed and maintained?			
3	Are additional sediment control BMPs needed?			
4	Are erosion control BMPs properly installed and maintained?			
5	Are additional erosion control BMPs needed?			
6	Is waste properly disposed of in designated areas?			
7	Are materials properly stored in designated areas?			
8	Is soil properly protected from leaks or drips from equipment?			
9	Are concrete washout pit properly installed, used, and maintained?			
10	Is SWPPP being continually updated?			

Comments:

Inspector Signature, date		Contractor Signature, date	
Printed Name and Title		Printed Name and Title	
Storm Start:		Total Rainfall (in):	
Storm Finish:		Days since last rain:	

Attachment I

Trained Contractor Personnel Log

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Storm Water Management Training Log

Project Name: Lucerne Solar

Project Number/Location: WDID No: Lucerne Valley, CA

Storm Water Management Topic: (check as appropriate)

☐ Erosion Control

☐ Wind Erosion Control

☐ Non-storm water management

☐ Storm Water Sampling

☐ Sediment Control

☐ Tracking Control

☐ Waste Management and Materials Pollution Control

Specific Training Objective: ____________________

Location: ____________________ Date: ____________________

Instructor: ____________________ Telephone: ____________________

Course Length (hours): ____________________

Attendee Roster (attach additional forms if necessary)

Name	Company	Phone

Name	Company	Phone

COMMENTS:

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Summary of SWPPP Author - Training / Qualifications

Aaron Mlynek, CPESC (#3344)

Certifications/Degrees

- Certified Professional in Erosion and Sediment Control
- Certified Erosion, Sediment and Storm Water Inspector
- Certified Inspector of Sediment and Erosion Control
- B.S. in Natural Resource Management and Conservation

Training

- IECA
    - SWPPP Design / Planning
    - Effective Inspection Programs for Construction Site Runoff Control
    - BMP Application and Design
- University of Minnesota
    - SWPPP Design
    - Construction Site Stormwater Management

Memberships

- International Erosion Control Association
- Minnesota Erosion Control Association

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Attachment J

Subcontractor Notification Letter and Notification Log

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SWPPP Notification

Company
Address
City, State, ZIP

Dear Sir/Madam,

Please be advised that the California State Water Resources Control Board has adopted the General Permit (General Permit) for Storm Water Discharges Associated with Construction Activity (CAS000002). The goal of these permits is prevent the discharge of pollutants associated with construction activity from entering the storm drain system, ground and surface waters.

Chevron Energy Solutions Company has developed a Storm Water Pollution Prevention Plan (SWPPP) in order to implement the requirements of the Permits.

As a subcontractor, you are required to comply with the SWPPP and the Permits for any work that you perform on site. Any person or group who violates any condition of the Permits may be subject to substantial penalties in accordance with state and federal law. You are encouraged to advise each of your employees working on this project of the requirements of the SWPPP and the Permits. A copy of the Permits and the SWPPP are available for your review at the construction office. Please contact me if you have further questions.

Sincerely,

Ralph Hollenbacher
Senior Manager – Technical Services
Chevron Energy Solutions Company

SUBCONTRACTOR NOTIFICATION LOG

Project Name: Lucerne Solar

Project Number/Location: WDID #:

SUBCONTRACTOR COMPANY NAME	CONTACT NAME	ADDRESS	PHONE NUMBER	PAGER/ FIELD PHONE	DATE NOTIFICATION LETTER SENT	TYPE OF WORK

USE ADDITIONAL PAGES AS NECESSARY

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Attachment K

Notice of Non-Compliance

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To: Date:

Subject: Notice of Non-Compliance

Project Name: Lucerne Solar

Project Number/Location: WDID #: Lucerne Valley, CA

In accordance with the NPDES Statewide Permit for Storm Water Discharges Associated with Construction Activity, the following instance of discharge is noted:

Date, time, and location of discharge

Nature of the operation that caused the discharge

Initial assessment of any impact cause by the discharge

Existing BMP(s) in place prior to discharge event

Date of deployment and type of BMPs deployed after the discharge.

Steps taken or planned to reduce, eliminate and/or prevent recurrence of the discharge

Implementation and maintenance schedule for any affected BMPs

If further information or a modification to the above schedule is required, notify the contact person below.

Name of Contact Person	**Title**
Company	**Telephone Number**
Signature	**Date**

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Attachment L

Storm Water Pollution Prevention Plan (SWPPP) and Monitoring Program Checklist

CONSTRUCTION PROJECT: Lucerne Solar

PREPARER: Aaron Mlynek, CPESC (#3344)

Project NO: 20081195 (Westwood Project #) WDID#:

SECTION A: STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

CHECK IF ADDRESSED N/A IF NOT APPLICABLE	**SWPPP Section**	**ITEM**	**GENERAL PERMIT REF.**	**COMMENTS**
	100	***SWPPP Certification and Approval***	***C.10***	
	100.1	SWPPP Certification	***C.10***	
	100.2	SWPPP Approval	***C.10***	
	200	***SWPPP Amendments***	***A.4.a, A.16***	
	200.1	Amendment number and date entered into SWPPP – Amendment Log	***A.4.a, A.16***	
	200.2	Amendment Certification and Approval	***A.4.a, A.16***	
	300	***Introduction/Project Description***		
	300.1	Project Description and Location (narrative)	***A.5.a.1***	
	300.2	Unique Site Features (narrative)	***A.5.a.1***	
	300.4	***Project Schedule (narrative and graphical)***	***A.5.c.5***	
	400	***References***	***A.14***	
	500.2	***Vicinity Map (narrative or graphic)***	***A.5.a.1***	

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SECTION A: STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

CHECK IF ADDRESSED N/A IF NOT APPLICABLE	SWPPP Section	ITEM	GENERAL PERMIT REF.	COMMENTS
	500.2	Site perimeter	A.5.a.1	
	500.2	Geographic Features	A.5.a.1	
	500.2	General topography	A.5.a.1	
	500.4	***Water Pollution Control Drawings (WPCDs) (graphic or narrative)***	A.5.a.2	
	500.4	***Site perimeter***	***A.5.a.2***	
	500.4	Existing and proposed buildings, lots, and roadways	***A.5.a.2***	
	500.4	Storm water collection and discharge points	***A.5.a.2***	
	500.4	General topography before and after construction	***A.5.a.2***	
	500.4	Anticipated discharge location(s)	***A.5.a.2***	
	500.4	Drainage patterns including the entire relevant drainage areas	***A.5.a.2***	
	500.4	Temporary on-site drainage(s)	***A.5.a.2***	
	500.3	***Pollutant Source and BMP Identification (narrate/ or indicate on site map)***	A.5.b	
		Drainage	A.5.b.1	
	500.4	Drainage patterns after major grading	A.5.b.1	
	500.4	Slopes after major grading	A.5.b.1	
	Attach. E	Calculations for storm water run-on	A.5.b.1	
	500.4	BMPs that divert off-site drainage from passing through site	A.5.b.1	
	500.4	***Storm Water Inlets***	A.5.b.2	
	500.4	Drainage patterns to storm water inlets or receiving water	A.5.b.2	
	500.4	BMPs that protect storm water inlets or receiving water	A.5.b.2	
		Site History (narrative; if possible, indicate location(s) on the Water Pollution Control Drawings)	A.5.b	

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SECTION A: STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

CHECK IF ADDRESSED N/A IF NOT APPLICABLE	**SWPPP Section**	**ITEM**	**GENERAL PERMIT REF.**	**COMMENTS**
	500.3.3	Nature of fill material and data describing the soil. Description of toxic materials treated, stored, disposed, spilled or leaked on site	A.5.b.3	
	500.3.8 & 500.3.9	BMPs that minimize contact of contaminants with storm water	A.5.b.3	
		Location of Areas Designated for:	A.5.b.4	
	500.3.8 & 500.4	Vehicle storage & service	A.5.b.4	
	500.3.8 & 500.4	Equipment storage, cleaning, maintenance	A.5.b.4	
	500.3.9 & 500.4	Soil or waste storage	A.5.b.4	
	500.3.9 & 500.4	Construction material loading, unloading, storage and access	A.5.b.4	
	500.3.8 & 500.3.9	Areas outside of physical site (yards, borrow areas, etc.)		
		BMP Locations or Descriptions for:	A.5.b.5	
	500.3.9 & 500.4	Waste handling and disposal areas	A.5.b.5	
	500.3.9 & 500.4	On-site storage and disposal of construction materials and waste	A.5.b.5	
	500.3.8, 500.3.9 & 500.4	Minimum exposure of storm water to construction materials, equipment, vehicles, waste	A.5.b.5	
	500.6	***Post Construction BMPs***	A.5.b.6	
	500.6.1	Listing or Description of Post-construction BMPs	A.5.b.6	
	500.4	Location of post-construction BMPs	A.5.b.6	
	500.6.2	Parties responsible for long-term maintenance	A.5.b.6	
		Additional Information	A.5.c	
	500.3.1	Description of other pollutant sources and BMPs	A.5.c.1	
	500.3.2	Pre-construction control practices	A.5.c.1	
	500.3.1	Inventory of materials and activities that may pollute storm water	A.5.c.2	
	500.3.8 & 500.3.9	BMPs to reduce/eliminate potential pollutants listed in the inventory	A.5.c.2	
	300.4	Runoff coefficient (before & after)	A.5.c.3	
	300.4	Percent impervious (before & after)	A.5.c.3	

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SECTION A: STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

CHECK IF ADDRESSED N/A IF NOT APPLICABLE	SWPPP Section	ITEM	GENERAL PERMIT REF.	COMMENTS
	Attach. F	Copy of the NOT	A.5.c.4	
	300.3	Construction activity schedule	A.5.c.5	
	300.5	Contact information	A.5.c.6	
	500.4.1	**SOIL STABILIZATION (EROSION CONTROL)**	A.6	
		The SWPPP shall include:	A.6.a-c	
	500.4	Areas of vegetation on site	A.6.a.1	
	500.4	Areas of soil disturbance that will be stabilized during rainy season	A.6.a.2	
	500.4	Areas of soil disturbance which will be exposed during any part of the rainy season	A.6.a.3	
	300.4	Implementation schedule for erosion control measures	A.6.a.4	
	500.3.4	BMPs for erosion control	A.6.b	
	500.3.7	BMPs to control wind erosion	A.6.c	
	500.3.5	**SEDIMENT CONTROL**	A.8	
	500.3.5 & 500.4	Description/Illustration of BMPs to prevent increase of sediment load in discharge	A.8	
	300.4, 500.3.5	Implementation schedule for sediment control measures	A.8	
	500.3.6	BMPs to control sediment tracking	A.8	
	500.3.8 & 500.3.9	**NON-STORM WATER MANAGEMENT**	A.9	
	500.3.8 & 500.3.9	Description of non-storm water discharges to receiving waters	A.9	
	500.3.8 & 500.3.9	Locations of discharges	A.9	
	500.3.8 & 500.3.9	Description of BMPs	A.9	
	300.5	Name and phone number of person responsible for non-storm water management	A.9	
	500.6	**POST-CONSTRUCTION**	A.10	
	500.6.1	Description of post-construction BMPs	A.10	
	500.6.2	Operation/Maintenance of BMPs after project completion (including short-term funding, long-term funding and responsible party)	A.10	
	500.5	**MAINTENANCE, INSPECTIONS, AND REPAIR**	A.11	

SECTION A: STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

CHECK IF ADDRESSED N/A IF NOT APPLICABLE	SWPPP Section	ITEM	GENERAL PERMIT REF.	COMMENTS
	300.5, 600.1	Name and phone number of person(s) responsible for inspections	A.11	
	600.1, Attach. H	Complete inspection checklist: date, weather, inadequate BMPs, visual observations of BMPs, corrective action, inspector's name, title, signature	A.11.a-f	
		OTHER REQUIREMENTS	A.12-16	
	500.7	Documentation of all training	A.12	
	500.8	List of Contractors/Subcontractors	A.13	

SECTION B: MONITORING AND REPORTING REQUIREMENTS

CHECK IF ADDRESSED N/A IF NOT APPLICABLE	SWPPP Section	ITEM	GENERAL PERMIT REF.	COMMENTS
	600.1	Description of Site Inspection Plans	B.3	
	100.3	Compliance certification (annually 7/1)	B.4	
	600.2	Discharge reporting	B.5	
	600.3	Keep records of all inspections, compliance certifications, and noncompliance reports on site for a period of at least three years	B.6	
	600.4	Sampling and Analysis Plan for Sediment	B.7	
	600.5	Sampling and Analysis Plan for Non-Visible Pollutants	B.8	

SECTION C: STANDARD PROVISIONS FOR CONSTRUCTION ACTIVITIES

CHECK IF ADDRESSED N/A IF NOT APPLICABLE	SWPPP Section	ITEM	GENERAL PERMIT REF.	COMMENTS
	100.1	Signed SWPPP Certification	C.9,10	

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Attachment M

Annual Certification of Compliance Form

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Project Name: Lucerne Solar

Project Number: WDID #:

Company Name: Chevron Energy Solutions Company

Address: 345 California Street, 18th Floor, San Francisco, CA 94104

Construction Start Date: Start date **Completion Date:** Completion date

This project is in compliance with the General Permit and this SWPPP (check yes or no) ____ **YES** ____ **NO**

Description of Work:

Work Now in Progress:

Work Planned for Next 12 Months:

"I certify under penalty of law that, during the past 12 months, the construction activities are in compliance with the requirements of the General Permit and this SWPPP. This Certification is based upon the site inspections required in Section B, Item 3 of the General Permit. This document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Owner (or Authorized Representative) Signature	Date
Name and Title	Telephone Number

Attachment N

Other Plans and Permits

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Attachment O

Notice of Termination

(Owner to insert completed Notice of Termination upon project completion and related proof of submittal and correspondences for records).

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State Water Resources Control Board

Division of Water Quality
1001 I Street • Sacramento, California 95814 • (916) 341-5537
Mailing Address: P.O. Box 1977 • Sacramento, California • 95812-1977
FAX (916) 341-5543 • Internet Address: http://www.waterboards.ca.gov/stormwtr/index.html

Linda S. Adams
Secretary for
Environmental Protection

Arnold Schwarzenegger
Governor

To: Storm Water Permit Holder

RE:NOTICE OF TERMINATION OF COVERAGE UNDER THE GENERAL
CONSTRUCTION STORM WATER PERMIT (GENERAL PERMIT)

In order for us to terminate your coverage under the General Permit, please complete and submit the enclosed Notice of Termination (NOT) your local Regional Water Quality Control Board (RWQCB). Refer to the last page of the NOT packet for RWQCB locations.

Submittal of a NOT does not guarantee termination and outstanding invoices are still valid. If your NOT is denied, you will be required to continue complying with the requirements of the General Permit and all outstanding invoice(s) are due. You will be notified of your NOT status by the RWQCB or State Water Resources Control Board. Approval of your Notice of Termination does not relieve you from paying any applicable outstanding invoices.

Should you have any questions regarding this matter, please contact your local RWQCB at the number listed on the back page of the NOT package, or the Storm Water Unit at (916) 341-5537.

Sincerely,

Storm Water Unit
Division of Water Quality

Enclosure

SEND TO YOUR LOCAL RWQCB FOR APPROVAL

State of California
State Water Resources Control Board

NOTICE OF TERMINATION

OF COVERAGE UNDER THE NPDES GENERAL PERMIT NO. CAS000002
FOR DISCHARGES OF STORM WATER
ASSOCIATED WITH CONSTRUCTION ACTIVITY

Submission of this Notice of Termination constitutes notice that the owner (and his/her agent) of the site identified on this form is no longer authorized to discharge storm water associated with construction activity by NPDES General Permit No. CAS000002.

I. WDID NO.

II. OWNER

COMPANY NAME ____________________ CONTACT PERSON

STREET ADDRESS ____________________ TITLE

CITY ________ STATE ________ ZIP ________ PHONE

III. CONSTRUCTION SITE INFORMATION

A. DEVELOPER NAME ____________________ CONTACT PERSON

STREET ADDRESS ____________________ TITLE

CITY ____________________ CA ________ ZIP ________ PHONE

B. SITE ADDRESS ____________________ COUNTY ____________________

CITY ____________________ CA ________ ZIP ________ PHONE

IV. BASIS OF TERMINATION

_____ 1. The construction project is complete and the following conditions have been met.

- All elements of the Storm Water Pollution Prevention Plan have been completed.
- Construction materials and waste have been disposed of properly.
- The site is in compliance with all local storm water management requirements.
- A post-construction storm water operation and management plan is in place.

Date of project completion _____/_____/_____

_____ 2. Construction activities have been suspended, either temporarily _____ or indefinitely _____ and the following conditions have been met.

- All elements of the Storm Water Pollution Prevention Plan have been completed.
- Construction materials and waste have been disposed of properly.
- All denuded areas and other areas of potential erosion are stabilized.
- An operation and maintenance plan for erosion and sediment control is in place.
- The site is in compliance with all local storm water management requirements.

SEND TO YOUR LOCAL RWQCB FOR APPROVAL

Date of suspension _____/_____/_____ Expected start up date _____/_____/_____

_____ 3. Site can not discharge storm water to waters of the United States (check one).

_____ All storm water is retained on site.

_____ All storm water is discharged to evaporation or percolation ponds offsite.

_____ 4. Discharge of storm water from the site is now subject to another NPDES general permit or an individual NPDES permit.

NPDES Permit No._________ Date coverage began _____/_____/_____

_____ 5. There is a new owner of the identified site. Date of owner transfer _____/_____/_____

Was the new owner notified of the General Permit requirements? YES ____ NO ____

NEW OWNER INFORMATION

COMPANY NAME ______________________ CONTACT PERSON ______________________

STREET ADDRESS ______________________ TITLE ______________________

CITY ______________________ STATE ________ ZIP ________ PHONE ________

V. EXPLANATION OF BASIS OF TERMINATION (Attach site photographs - see instructions).

VI. CERTIFICATION:

I certify under penalty of law that all storm water discharges associated with construction activity from the identified site that are authorized by NPDES General Permit No. CAS000002 have been eliminated or that I am no longer the owner of the site. I understand that by submitting this Notice of Termination, I am no longer authorized to discharge storm water associated with construction activity under the general permit, and that discharging pollutants in storm water associated with construction activity to waters of the United States is unlawful under the Clean Water Act where the discharge is not authorized by a NPDES permit. I also understand that the submittal of this Notice of Termination does not release an owner from liability for any violations of the general permit or the Clean Water Act.

PRINTED NAME ______________________ TITLE ______________________

SIGNATURE: ______________________ DATE _____/_____/_____

REGIONAL WATER BOARD USE ONLY

This Notice of Termination has been reviewed, and I recommend termination of coverage under the subject NPDES general permit.

Printed Name ______________________ Region No. ________

Signature ______________________ Date _____/_____/_____

NOT effective date:

Date: _____/_____/_____

State of California
State Water Resources Control Board

INSTRUCTIONS FOR COMPLETING NOTICE OF TERMINATION FOR CONSTRUCTION ACTIVITY

Who May File

Dischargers who are presently covered under NPDES General Permit No. CAS000002 for discharge of storm water associated with construction activity may submit a Notice of Termination when they meet one of the following criteria.

1. The construction project has been completed and the following conditions have been met: all elements of the Stormwater Pollution Prevention Plan have been completed; construction materials and equipment maintenance waste have been disposed of properly; the site is in compliance with all local storm water management requirements including erosion/sediment control requirements and the appropriate use permits have been obtained; and a post-construction storm water operation and management plan is in place.

2. Construction activities have been suspended, either temporarily or indefinitely and the following conditions have been: all elements of the Stormwater Pollution Prevention Plan have been completed; construction materials and equipment maintenance waste have been disposed of properly; all denuded areas and other areas of potential erosion are stabilized; an operation and maintenance plan for erosion and sediment control is in place; and the site is in compliance with all local storm water management requirements including erosion/sediment control requirements.
   The date construction activities were suspended, and the expected date construction activities will start up again should be provided.

3. Construction site can not discharge storm water to waters of the United States. Please indicate if all storm water is retained on site or if storm water is collected offsite.

4. Discharge of construction storm water from the site is now subject to another NPDES general permit or an individual NPDES permit. The general permit or individual permit NPDES number and date coverage began should be provided.

5. There is a new owner of the identified site. If ownership or operation of the facility has been transferred then the previous owner must submit a Notice of Termination and the new owner must submit a Notice of Intent for coverage under the general permit. The date of transfer and information on the new owner should be provided. Note that the previous owner may be liable for discharge from the site until the new owner files a Notice of Intent for coverage under the general permit.

Where to File

Submit the Notice of Termination to the Executive Officer of the Regional Water Quality Control Board responsible for the area in which the facility is located. See attached. Submittal of a NOT does not guarantee termination and outstanding invoices are still valid. If the Executive Officer, or his designated staff, agrees with the basis of termination, the Notice of Termination will be transmitted to the State Water Board for processing at which time it will be determined if any outstanding invoices are still valid. Approval of your Notice of Termination does not relieve you from paying any applicable outstanding invoices. If the Executive Officer, or his designated staff, does not agree with the basis of termination, the Notice of Termination will be returned. The Regional Water Board may also inspect your site prior to accepting the basis of termination.

LINE-BY-LINE INSTRUCTIONS

All necessary information must be provided on the form. Type or print in the appropriate areas only. Submit additional information, if necessary, on a separate sheet of paper.

SECTION I--WDID NO.

The WDID No. is a number assigned to each discharger covered under the General Permit. If you do not know your WDID No., please call the State Water Board or Regional Water Board and request it prior to submittal of the Notice of Termination.

SECTION II--OWNER

Enter the owner of the construction site's official or legal name (This should correspond with the name on the Notice of Intent submitted for the site), address of the owner, contact person, and contact person's title and telephone number.

SECTION III--CONSTRUCTION SITE INFORMATION

In Part A, enter the name of the developer (or general contractor), address, contact person, and contact person's title and telephone number. The contact person should be the construction site manager completely familiar with the construction site and charged with compliance and oversight of the general permit. This information should correspond with information on the Notice of Intent submitted for the site.

In Part B, enter the address, county, and telephone number (if any) of the construction site. Construction sites that do not have a street address must attach a legal description of the site.

SECTION IV--BASIS OF TERMINATION

Check the category which best defines the basis of your termination request. See the discussion of the criteria in the Who May File section of these instructions. Provide dates and other information requested. Use the space under Explanation of Basis of Termination heading.

SECTION V--EXPLANATION OF BASIS OF TERMINATION

Please explain the basis or reasons why you believe your construction site is not required to comply with the General Permit. To support your explanation, provide a site map and photograph of your site.

SECTION VI--CERTIFICATION

This section must be completed by the owner of the site.

The Notice of Termination must be signed by:

For a Corporation: a responsible corporate officer

For a Partnership or Sole Proprietorship: a general partner or the proprietor, respectively.

For a Municipality, State, or other Non-Federal Public Agency: either a principal executive officer or ranking elected official.

For a Federal Agency: either the chief or senior executive officer of the agency.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARDS

NORTH COAST REGION (1)
5550 Skylane Blvd, Ste. A
Santa Rose, CA 95403
(707) 576-2220 FAX: (707)523-0135
http://www.waterboards.ca.gov/northcoast/

SAN FRANCISCO BAY REGION (2)
1515 Clay Street, Ste. 1400
Oakland, CA 94612
(510) 622-2300 FAX: (510) 622-2640
http://www.waterboards.ca.gov/sanfranciscobay/

CENTRAL COAST REGION (3)
895 Aerovista Place, Ste 101
San Luis Obispo, CA 93401
(805) 549-3147 FAX: (805) 543-0397
http://www.waterboards.ca.gov/centralcoast/

LOS ANGELES REGION (4)
320 W. 4th Street, Ste. 200
Los Angeles, CA 90013
(213) 576-6600 FAX: (213) 576-6640
http://www.waterboards.ca.gov/losangeles/

CENTRAL VALLEY REGION (5S)
11020 Sun Center Dr., #200
Rancho Cordova, CA 95670-6114
(916) 464-3291 FAX: (916) 464-4645
http://www.waterboards.ca.gov/centralvalley/

FRESNO BRANCH OFFICE (5F)
1685 E St.
Fresno, CA 93706
(559) 445-5116 FAX: (559) 445-5910
http://www.waterboards.ca.gov/centralvalley/

REDDING BRANCH OFFICE (5R)
415 Knollcrest Drive, Ste. 100
Redding, CA 96002
(530) 224-4845 FAX: (530) 224-4857
http://www.waterboards.ca.gov/centralvalley/

LAHONTAN REGION (6 SLT)
2501 Lake Tahoe Blvd.
South Lake Tahoe, CA 96150
(530) 542-5400 FAX: (530) 544-2271
http://www.waterboards.ca.gov/lahontan/

VICTORVILLE OFFICE (6V)
14440 Civic Drive, Ste. 200
Victorville, CA 92392-2383
(760) 241-6583 FAX: (760) 241-7308
http://www.waterboards.ca.gov/lahontan/

COLORADO RIVER BASIN REGION (7)
73-720 Fred Waring Dr., Ste. 100
Palm Desert, CA 92260
(760) 346-7491 FAX: (760) 341-6820
http://www.waterboards.ca.gov/coloradoriver/

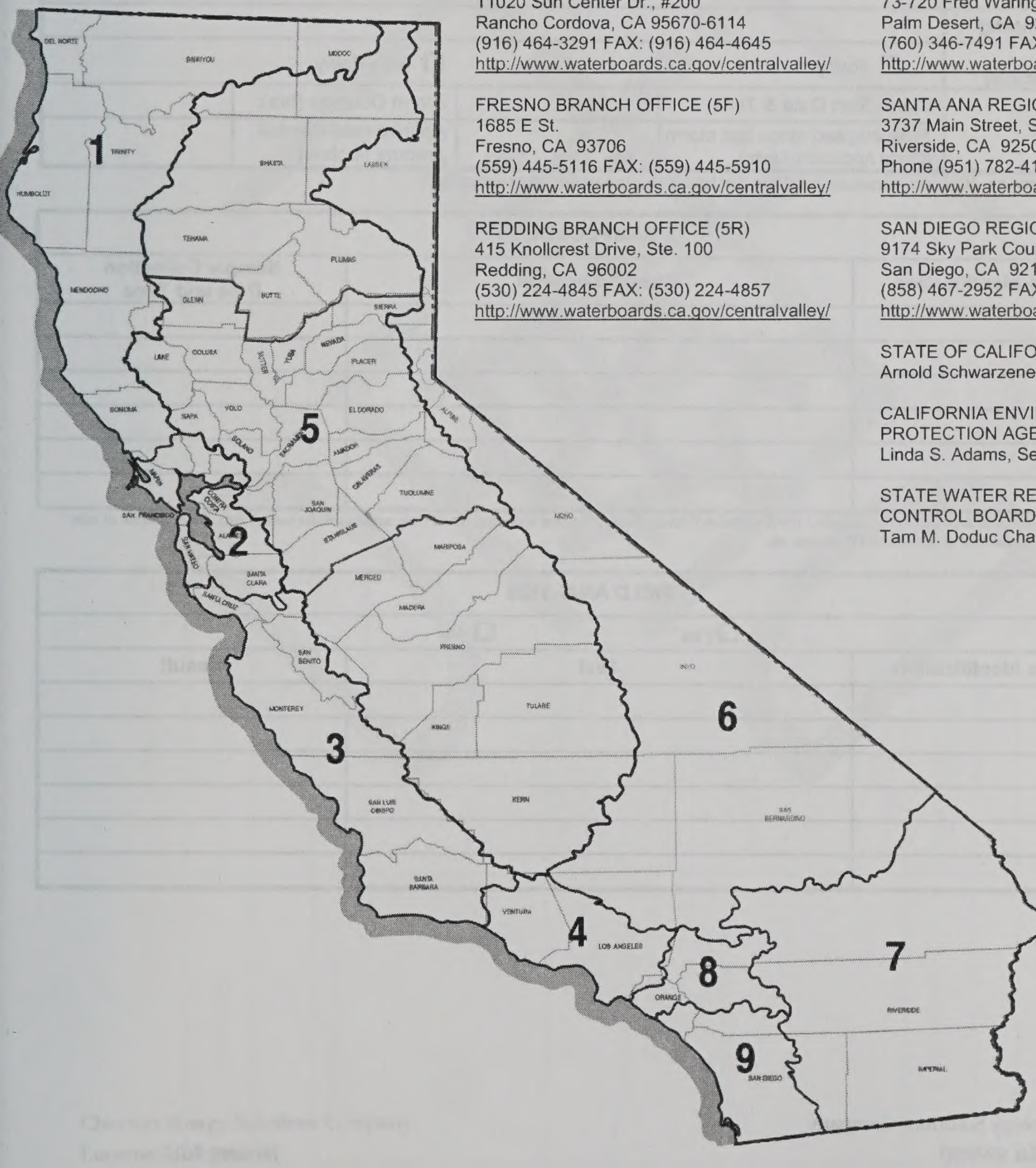
SANTA ANA REGION (8)
3737 Main Street, Ste. 500
Riverside, CA 92501-3339
Phone (951) 782-4130 FAX: (951) 781-6288
http://www.waterboards.ca.gov/santaana/

SAN DIEGO REGION (9)
9174 Sky Park Court, Ste. 100
San Diego, CA 92123-4340
(858) 467-2952 FAX: (858) 571-6972
http://www.waterboards.ca.gov/sandiego/

STATE OF CALIFORNIA
Arnold Schwarzenegger, Governor

CALIFORNIA ENVIRONMENTAL
PROTECTION AGENCY
Linda S. Adams, Secretary

STATE WATER RESOURCES
CONTROL BOARD
Tam M. Doduc Chair



Attachment P

Sampling Activity Log

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RAIN EVENT GENERAL INFORMATION				
Project Name	Lucerne Solar			
Project Number	WDID #:			
Contractor				
Sampler's Name				
Signature				
Date of Sampling				
Season (Check Applicable)	☐ Rainy		☐ Non-Rainy	
Storm Data	Storm Start Date & Time:		Storm Duration (hrs):	
	Time elapsed since last storm (Circle Applicable Units)	Min. Hr. Days	Approximate Rainfall Amount (inches)	

For rainfall information: http://cdec.water.ca.gov/weather.html or http://www.wrh.noaa.gov/wrhq/nwspage.html

SAMPLE LOG		
Sample Identification	**Sample Location**	**Sample Collection Date and Time**

Specific sample locations descriptions may include: 100 ft upstream from discharge at eastern boundary, runoff from northern waste storage area, down gradient of inlet located near the intersection of A Street and B Avenue, etc.

FIELD ANALYSIS		
	☐Yes	☐ No
Sample Identification	**Test**	**Result**

Attachment Q

Pollutant Testing Guidance Table

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Attachment Q
Pollutant Testing Guidance Table [1]

Category	Construction Site Material	Visually Observable?	Pollutant Indicators [2]	Suggested Analyses Field [3]	Laboratory
Asphalt Products	Hot Asphalt	Yes - Rainbow Surface or Brown Suspension	Visually Observable - No Testing Required		
	Asphalt Emulsion				
	Liquid Asphalt (tack coat)				
	Cold Mix				
	Crumb Rubber	Yes – Black, solid material	Visually Observable - No Testing Required		
	Asphalt Concrete (Any Type)	Yes - Rainbow Surface or Brown Suspension	Visually Observable - No Testing Required		
Cleaning Products	Acids	No	**pH** Acidity Anions (acetic acid, phosphoric acid, sulfuric acid, nitric acid, hydrogen chloride)	pH Meter Acidity Test Kit	EPA 150.1 (pH)
					SM 2310B (Acidity)
					EPA 300.0 (Anion)
	Bleaches	No	Residual Chlorine	Chlorine	SM 4500-CL G (Res. Chlorine)
	Detergents	Yes - Foam	Visually Observable - No Testing Required		
	TSP	No	Phosphate	Phosphate	EPA 365.3 (Phosphate)
	Solvents	No	**VOC**	None	EPA 601/602 or EPA 624 (VOC)

Attachment Q
Pollutant Testing Guidance Table [1]

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Category	Construction Site Material	Visually Observable?	Pollutant Indicators [2]	Suggested Analyses Field [3]	Laboratory
			SVOC	None	EPA 625 (SVOC)
Portland Concrete Cement & Masonry Products	Portland Cement (PCC)	Yes - Milky Liquid	Visually Observable - No Testing Required		
	Masonry products	No	**pH**	pH Meter Alkalinity or Acidity Test Kit	EPA 150.1 (pH)
			Alkalinity		SM 2320 (Alkalinity)
	Sealant (Methyl Methacrylate - MMA)	No	Methyl Methacrylate	None	EPA 625 (SVOC)
			Cobalt		EPA 200.8 (Metal)
			Zinc		
	Incinerator Bottom Ash Bottom Ash Steel Slag Foundry Sand Fly Ash Municipal Solid Waste	No	**Aluminum** **Calcium** **Vanadium** **Zinc**	Calcium Test	EPA 200.8 (Metal) EPA 200.7 (Calcium)
	Mortar	Yes - Milky Liquid	Visually Observable - No Testing Required		
	Concrete Rinse Water	Yes - Milky Liquid	Visually Observable - No Testing Required		
	Non-Pigmented Curing Compounds	No	Acidity	pH Meter Alkalinity or Acidity Test Kit	SM 2310B (Acidity)
			Alkalinity		SM 2320 (Alkalinity)

Attachment Q
Pollutant Testing Guidance Table [1]

Category	Construction Site Material	Visually Observable?	Pollutant Indicators [2]	Suggested Analyses Field [3]	Laboratory
			pH		EPA 150.1 (pH)
			VOC		EPA 601/602 or EPA 624 (VOC)
			SVOC		EPA 625 (SVOC)
Landscaping and Other Products	Aluminum Sulfate	No	Aluminum	TDS Meter Sulfate	EPA 200.8 (Metal)
			TDS		EPA 160.1 (TDS)
			Sulfate		EPA 300.0 (Sulfate)
	Sulfur-Elemental	No	Sulfate	Sulfate	EPA 300.0 (Sulfate)
	Fertilizers-Inorganic [4]	No	Nitrate	Nitrate	EPA 300.0 (Nitrate)
			Phosphate	Phosphate	EPA 365.3 (Phosphate)
			Organic Nitrogen	None	EPA 351.3 (TKN)
			Potassium	None	EPA 200.8 (Metal)
	Fertilizers-Organic	No	TOC	Nitrate	EPA 415.1 (TOC)
			Nitrate		EPA 300.0 (Nitrate)
			Organic Nitrogen		EPA 351.3 (TKN)
			COD		EPA 410.4 (COD)

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Attachment Q
Pollutant Testing Guidance Table [1]

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Category	Construction Site Material	Visually Observable?	Pollutant Indicators [2]	Suggested Analyses Field [3]	Laboratory
	Natural Earth (Sand, Gravel, and Topsoil)	Yes - Cloudiness and turbidity	Visually Observable - No Testing Required		
	Herbicide	No	Herbicide	None	Check lab for specific herbicide or pesticide
	Pesticide		**Pesticide**		
	Lime		Alkalinity	pH Meter Alkalinity or Acidity Test Kit	SM 2320 (Alkalinity)
			pH		EPA 150.1 (pH)
Painting Products	Paint	Yes	Visually Observable - No Testing Required		
	Paint Strippers	No	VOC	None	EPA 601/602 or EPA 624 (VOC)
			SVOC	None	EPA 625 (SVOC)
	Resins	No	COD	None	EPA 410.4 (COD)
			SVOC		EPA 625 (SVOC)
	Sealants	No	COD	None	EPA 410.4 (COD)
	Solvents	No	COD	None	EPA 410.4 (COD)
			VOC		EPA 601/602 or EPA 624 (VOC)
			SVOC		EPA 625 (SVOC)

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Attachment Q
Pollutant Testing Guidance Table [1]

Category	Construction Site Material	Visually Observable?	Pollutant Indicators [2]	Suggested Analyses Field [3]	Laboratory
	Lacquers, Varnish, Enamels, and Turpentine	No	COD	None	EPA 410.4 (COD)
			VOC		EPA 601/602 or EPA 624 (VOC)
			SVOC		EPA 625 (SVOC)
	Thinners	No	VOC	None	EPA 601/602 or EPA 624 (VOC)
			COD		EPA 410.4 (COD)
Portable Toilet Waste Products	Portable Toilet Waste	Yes	Visually Observable - No Testing Required		
Contaminated Soil [5]	Aerially Deposited Lead[3]	No	Lead	None	EPA 200.8 (Metal)
	Petroleum	Yes – Rainbow Surface Sheen and Odor	Visually Observable - No Testing Required		
	Other	No	Contaminant Specific	Contaminant Specific	Contaminant Specific
Line Flushing Products	Chlorinated Water	No	Total chlorine	Chlorine	SM 4500-CL G (Res. Chlorine)
Adhesives	Adhesives	No	COD	None	EPA 410.4 (COD)
			Phenols	Phenol	EPA 420.1 (Phenol)
			SVOC	None	EPA 625 (SVOC)

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Attachment Q
Pollutant Testing Guidance Table [1]

Category	Construction Site Material	Visually Observable?	Pollutant Indicators [2]	Suggested Analyses Field [3]	Laboratory
Dust Palliative Products	Salts (Magnesium Chloride, Calcium Chloride, and Natural Brines)	No	Chloride	Chloride	EPA 300.0 (Chloride)
			TDS	TDS Meter	EPA 160.1 (TDS)
			Cations (Sodium, Magnesium, Calcium)	None	EPA 200.7 (Cations)
Vehicle	Antifreeze and Other Vehicle Fluids	Yes - Colored Liquid	Visually Observable - No Testing Required		
	Batteries	No	Sulfuric Acid	None	EPA 300.0 (Sulfate)
			Lead	None	EPA 200.8 (Metal)
			pH	pH Meter Alkalinity or Acidity Test Kit	EPA 150.1 (pH)
	Fuels, Oils, Lubricants	Yes - Rainbow Surface Sheen and Odor	Visually Observable - No Testing Required		
Soil Amendment/Stabilization Products	Polymer/Copolymer [6,7]	No	Organic Nitrogen	None	EPA 351.3 (TKN)
			BOD	None	EPA 405.1 (BOD)
			COD	None	EPA 410.4 (COD)
			DOC	None	EPA 415.1 (DOC)
			Nitrate	Nitrate	EPA 300.0 (Nitrate)
			Sulfate	Sulfate	EPA 300.0 (Sulfate)
			Nickel	None	EPA 200.8 (Metal)
	Straw/Mulch	Yes - Solids	Visually Observable - No Testing Required		

Attachment Q
Pollutant Testing Guidance Table [1]

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Category	Construction Site Material	Visually Observable?	Pollutant Indicators [2]	Suggested Analyses	
				Field [3]	Laboratory
	Lignin Sulfonate	No	Alkalinity	Alkalinity	SM 2320 (Alkalinity)
			TDS	TDS Meter	EPA 160.1 (TDS)
	Psyllium	No	COD	None	EPA 410.4 (COD)
			TOC		EPA 415.1 (TOC)
	Guar/Plant Gums	No	COD	None	EPA 410.4 (COD)
			TOC		EPA 415.1 (TOC)
			Nickel		EPA 200.8 (Metal)
	Gypsum	No	pH	pH Meter Alkalinity or Acidity Test Kit	EPA 150.1 (pH)
			Calcium	Calcium	EPA 200.7 (Calcium)
			Sulfate	Sulfate	EPA 300.0 (Sulfate)
			Aluminum	None	EPA 200.8 (Metal)
			Barium		
			Manganese		
			Vanadium		
Treated Wood Products	Ammoniacal-Copper-Zinc-Arsenate (ACZA) Copper-Chromium-Arsenic (CCA)	No	Arsenic	Total Chromium	EPA 200.8 (Metal)
			Total Chromium		
			Copper		

Attachment Q
Pollutant Testing Guidance Table [1]

Category	Construction Site Material	Visually Observable?	Pollutant Indicators [2]	Suggested Analyses Field [3]	Laboratory
	Ammoniacal-Copper-Arsenate (ACA) Copper Naphthenate		Zinc		
	Creosote	Yes - Rainbow Surface or Brown Suspension	Visually Observable - No Testing Required		

Notes:

1. 1 If specific pollutant is known, analyze only for that specific pollutant. See MSDS to verify.
2. For each construction material, test for one of the pollutant indicators. Bolded pollutant indicates lowest analysis cost or best indicator. However, the composition of the specific construction material, if known, is the first criterion for selecting which analysis to use.
3. See www.hach.com, www.lamotte.com, www.ysi.com and www.chemetrics.com for some of the test kits
4. If the type of inorganic fertilizer is unknown, analyze for all pollutant indicators listed.
5. Only if special handling requirements are required in the contract documents for aerially deposited lead (ADL)
6. If used with a dye or fiber matrix, it is considered visually observable and no testing is required.
7. Based upon research conducted by the State of California Department of Transportation (Caltrans), the following copolymers/polymers do not discharge pollutants and water quality sampling and analysis is **not** required: Super Tak™, M-Binder™, Fish Stik™, Pro40dc™, Fisch-Bond™, and Soil Master WR™.

DRAFT

Attachment R

Discharge Reporting Log

Project Name: Lucerne Solar

Project Number: WDID #

Date	Material(s) Discharged	Estimated Quantity	Observed By

Attachment S

Emergency Contact List

Owner
Chevron Energy Solutions Company, A
Division of Chevron USA, Inc
345 California Street, 18th Floor
San Francisco, California 94104
Ralph Hollenbacher
415-733-4910

Certified Laboratory
Lab Name
Street address
City, state, zip
Contact person
Phone number

Contractor
Contractor Name
Street address
City, state, zip
Contact person
Phone number

SWPPP Preparer
Westwood Profession Services, Inc.
7699 Anagram Drive
Eden Prairie, Minnesota 55431
Aaron Mlynek, CPESC
952-697-5710

SWPPM
Contractor Name
Street address
City, state, zip
Contact person
Phone number

Project Engineer
Westwood Profession Services, Inc.
7699 Anagram Drive
Eden Prairie, Minnesota 55431
Chris Carda, PE
952-906-7459

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Appendix J
Spill Prevention and Response Plan

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SPILL PREVENTION AND RESPONSE PLAN
THE LUCERNE SOLAR PROJECT
SAN BERNARDINO COUNTY, CALIFORNIA

Revision 1 dated: January 12, 2009

Chevron Energy Solutions
345 California Street, 18th Floor
San Francisco, CA 94104

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Figure 1 Lucerne Solar Vicinity Map

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Appendix A Spill Report Form

List of Acronyms and Abbreviations

BLM	Bureau of Land Management
CDFG	California Department of Fish and Game
CFR	Code of Federal Regulations
Project	Lucerne Solar Project
SPRG	Spill Prevention and Response Plan

SECTION 1 INTRODUCTION

SECTION 1 INTRODUCTION

1.1 PURPOSE

Chevron Energy Solutions has prepared this Spill Prevention and Response (SPRP) Plan to be implemented during both the construction and operational phases of the Lucerne Solar Project. The Project will consist of a 516 acre, solar photovoltaic facility on BLM land near the town of Lucerne Valley in San Bernardino, California (Figure 1). This land offers a typical desert landscape crossed by regional drainages that have been delineated as 'waters of the State' by CDFG.

This SPRP Plan provides restrictions and procedures for fuel storage, fueling activities, and construction equipment maintenance on the project site. Training and lines of communication to facilitate the prevention, response, containment, and cleanup of spills during construction activities are also outlined. The goals of this plan are to minimize the potential for a spill, to contain any spillage to the smallest area possible, and to protect areas that are considered environmentally sensitive (e.g., jurisdictional water ways, groundwater wells, etc.).

All operations, contractor and subcontractor personnel working on the Lucerne Solar Project are responsible for implementation of the measures and procedures defined in this SPRP Plan. This plan will be included, as written herein, in both the bid and the contract documents as contractual requirements and instructions to the contractor.

SECTION 2 PREVENTATIVE MEASURES

2.1 HAZARDS ASSESSMENT

The hazardous materials that may be on site during construction and operation of the solar field include those usually associated with operation and maintenance of vehicles and machinery, such as: diesel fuel, gasoline, hydraulic fluid, brake fluid, antifreeze and lubricants. Other materials considered hazardous are chemicals used in portable toilets and the associated human waste and herbicides that are used in the weed control plan. There is also the possibility of encountering buried hazardous or toxic materials during the construction process. Each of these hazards is briefly discussed in the following sections.

2.1.1 Vehicle Fluids

The materials associated with vehicle operation and maintenance are hazardous to humans, wildlife and sensitive environments. Spills of diesel fuel, gasoline, and hydraulic fluid are considered and spill prevention and control measures must be initiated. These materials can be toxic to the skin, eyes, respiratory system, and internal organs. Toxicity can be transmitted in the form of liquid or vapor. These materials may also be flammable and combustible, and proper precautions must be used in handling spills. Antifreeze, Freon, and other non-petroleum products are also hazardous toxic substances. The same spill prevention and response actions are to be employed with spills of these materials.

Potential sources of spills of vehicle fluids include mobile refueling trucks and construction vehicles and equipment. Potential causes of vehicle fluid spills include: emergency ruptures in fuel tanks or construction equipment; overflow of fuel from the tank during the refueling of equipment; seepage of fuel or lubricants during normal operation or storage; spills of oil or hydraulic fluid, etc. during on-site vehicle and equipment servicing; vehicle accidents; and natural disasters.

2.1.2 Chemical Toilets and Human Waste

Proper disposal and disinfection of human waste at the construction site is required. Human waste may contain infectious bacteria, pathogens, or other health hazards. Waste must be contained in portable toilets that receive periodic cleaning and disposal of waste. Chemicals used in toilets are also hazardous to wildlife and sensitive environments. Portable chemical toilets could overflow if not pumped regularly or they could spill if dropped or overturned during moving.

2.1.3 Herbicides

Herbicides will be used during both construction and operation to control nonnative plant populations. As these herbicides are generally stored in concentrated liquid form, potential fluid spills include: handling errors and ruptures in storage tanks.

2.1.4 Unknown Hazardous Materials

Given the previous mining activity on the site, the potential exists for encountering unknown hazardous materials within the construction site. These materials would most likely take the form of buried containers containing used lubricants, batteries, and etc. If any unknown waste is discovered, construction in that particular area shall stop until the material encountered is properly identified and removed.

2.2 CONTRACTOR RESPONSIBILITIES

Chevron will require its contractors and any subcontractors to do everything practicable to minimize the potential for a spill during construction of the Lucerne Solar Project. This will include compliance with applicable environmental and safety laws and regulations. Each contractor will be required to ensure a copy of this plan is available onsite to all contractor and subcontractor personnel.

2.3 TRAINING

All Chevron construction and operations personnel as well as contractor employees and subcontractors involved with transporting or handling fueling equipment or maintaining construction equipment will be required to complete spill training before they commence work on the project. Chevron will audit contractor compliance with respect to this requirement and instruct the contractor to replace any employee (or subcontractors' employee) found to be working on the project prior to having spill training. Spill training will also be required for contractor and subcontractor supervisory personnel prior to commencement of work on the project.

Spill training programs will be conducted by the construction contractor and the Chevron Construction Manager and will:

- Provide information concerning pollution control laws;
- Inform personnel concerning the proper operation and maintenance of fueling equipment;
- Inform personnel of spill prevention and response requirements; and
- Describe the measures and provisions of the SPRP Plan; and
- Assign roles and responsibilities for implementing the SPRP.

Measures, responsibilities, and provisions of this SPRP Plan and Training for other workers will be provided through ongoing weekly meetings, which will discuss safety, and spill prevention and response, including personal responsibility to initiate appropriate procedures. These weekly sessions will be held by the contractor as crew "tail gate" meetings. Chevron will audit the contractor compliance with this requirement and instruct the contractor to replace any foremen (or subcontractors' foremen) found to not be holding such meetings following the receipt of one warning. Attendance of training sessions will be documented using sign-in sheets that will become part of the permanent construction records.

2.4 RELEASE RESPONSE EQUIPMENT

The contractor will supply two spill prevention kits that can be used in the event of a spill, leak or other release. The spill prevention kits will be stored at contractor's laydown area. Each spill prevention kit will consist of the following:

- One 55-gallon drum,
- Two bags of absorbent,
- One bag of absorbent pads,
- One 400 square foot sheet of plastic sheeting,
- Two short handled shovels,
- One tyvek suit and booties
- Two pair of nitrile gloves, and
- Two pair of safety goggles.

In addition, the contractor shall provide a more portable, 20 gallon spill prevention kit for each refueling truck. These kits shall contain: :(25) 17" X 19" white oil-only Sonic Bonded pads, (4) 3" x 48" white oil-only socks, (2) 18" x 18" white oil-only pillows, (1) pair nitrile gloves, (1) pair goggles, (2) clear disposal bags, (3) bag ties, (1) 20 gallon over pack. Oil only products will soak up oil and repel water.

The contractor's Spill Coordinator (Section 4.1) will make known to all personnel involved with the construction (foremen, laborers, and inspectors), the contractor's warehouse/trailer locations of the spill prevention kits. These spill prevention kits will be readily accessible during construction. During operation, two, portable spill prevention packs will be stored in the Operations and Maintenance Building.

2.5 EQUIPMENT INSPECTION

Prior to moving any equipment onto the construction site, the contractor will visually inspect each piece of equipment for cracks, excessive corrosion, or other flaws that may compromise the integrity of its fuel, hydraulic, or cooling systems. The contractor will repair or replace leaking equipment immediately after a leak is detected and will be responsible for prompt reporting and mitigation of any fuel or lubricant spills from their equipment.

SECTION 3 REGULATED MATERIALS STORAGE AND HANDLING

SECTION 3 REGULATED MATERIALS STORAGE AND HANDLING

3.1 CONTRACTOR LAYDOWN AREAS

3.1.1 Contractors and operations personnel will not store fuel onsite. Any other petroleum products, herbicides or hazardous materials at the contractor's laydown area will be stored in safe locations within secondary containment structures. Secondary containment systems normally consist of a bermed area lined with an impervious material to provide a minimum containment volume equal to 150 percent of the volume of the largest storage vessel contained within the bermed area. Spill kits will be stored in readily accessible areas for quick use in the event that they are needed by the construction personnel.

3.1.2 Hazardous liquids will not be stored in areas subject to periodic flooding or within 100 feet of jurisdictional water boundaries. All hazardous materials stored at either the construction laydown or staging area or the operations and maintenance building will be stored in secure (fenced) areas. Accumulated rainwater may be removed if authorized by an Environmental Inspector under specific situations. Specifically, if visual inspection indicates that no spillage has occurred in the containment structure and if no sheen is present on the accumulated rainwater. If spillage has occurred in the structure, accumulated wastewater will be drawn off and pumped into a storage vessel for proper disposal.

3.1.3 All fuel nozzles will be equipped with functional automatic shut-off valves. Drip trays and sorbent pads should be used during on-site re-fueling to minimize spills. Prior to departure of any fuel tank truck, all outlets on the vehicle will be examined by the driver for leakage and tightened, adjusted, or replaced to prevent leaking while in transit.

3.1.4 Routine equipment maintenance of wheel-mounted vehicles such as oil changes will be accomplished at the contractor yards or staging areas to the greatest extent practical. Routine maintenance of track-mounted equipment will be conducted in a manner to gather all oil and other discharges and removed from the project site to a suitable recycling or disposal site.

3.1.5 Storage containers will display labels that identify the contents of the container and whether the contents are hazardous. The contractor will provide and maintain copies on site of Material Safety Data Sheets (MSDS) for all materials accessible to all contractor personnel including subcontractor

3.1.6 The contractor will provide, maintain, and make available the appropriate MSDS documents for all hazardous or controlled materials utilized on the project site or in the contractor's lay down area at an on-site location accessible to all contractor, subcontractor, and Chevron employees.

3.2 VEHICLE AND EQUIPMENT MAINTENANCE

All vehicle and equipment maintenance on the project site involving fluid replacement will be conducted at least 100 feet away from the boundary restrictions for jurisdictional waters of the State. Before lubricants are drained from the construction equipment, a suitable containment vessel and plastic sheeting will be placed under the equipment to collect any spilled material. The contractor will take necessary precautions to ensure that material that might accumulate on the liner does not spill on the ground surface. Vehicle maintenance wastes, including used oils and other fluids, will be handled and managed by personnel trained in the procedures outlined in this plan. Vehicle maintenance wastes will be stored and disposed of in accordance with applicable environmental regulations.

SECTION 4 SPILL RESPONSE

In the event of a spill, the release will be contained and cleaned up as soon as possible. The order of priorities after discovering a spill are to protect the safety of personnel and the public, minimize damage to the environment, and control costs associated with cleanup and remediation. The initial response to an emergency will be to protect human health and safety, and then the environment. If a spill is not contained within a dike, an area of isolation will be established around the spill. The size of this area will depend on the size of the spill and the materials involved. The contractor will take precautions in the area of a spill to eliminate possible sources of ignition.

4.1 SPILL COORDINATOR

The contractor or plant operator (if during the operations phase) will appoint a Spill Coordinator who will be responsible for the reporting of spills, coordinating contractor personnel for spill cleanup, subsequent site investigations, and associated incident reports. The Spill Coordinator will report to the Chevron Construction Manager or other designated Chevron onsite representative. In the event of a spill, the Spill Coordinator will be responsible for determining the extent of the isolation area and insuring that proper clean up and disposal measures are initiated. Any notifications under Section 6 of this plan shall be the responsibility of the Chevron site representative.

4.2 IMMEDIATE RESPONSE

All spills regardless of size must be reported to the Spill Coordinator and/or the Chevron Site Representative. The person observing the incident will take the following actions:

- Assess the situation.
- Make every effort to stop the source of the spill and remove any potential ignition sources.
- Promptly notify the contractor's Spill Coordinator and/or Chevron's Construction Manager. Report your name, the spill location, and the extent of the incident. Upon learning of the spill, the Spill Coordinator will implement the following measures:
- Sorbent materials will be applied to the spill area. Contaminated soils and vegetation will be excavated and temporarily placed on and covered by plastic until proper disposal is arranged.

4.2.1 Specific Response Procedures

Specific response procedures have been developed for various spills including vehicle fluid spills; chemical toilet and human waste spills; herbicide spills and discovery of an unknown hazardous material.

Some response procedures common to all spills are to keep people away from the spilled material, secure the source of the spill, if this can be done safely, and determine the spilled material, the volume, extent, and potential for danger of the spill. Securing the source of the spill is an extremely important step in the response activities. However, a source should be secured only if it can be performed safely without risk to human life and health. Steps to be taken to secure the source include turning off machinery, clamping or disabling hoses, etc.

Another key element in the early response to all spills is determining the type of material spilled and the volume and extent of the spill. This should be determined as soon as possible to facilitate the proper response operations. The volume will be needed to evaluate equipment and personnel needs, as well as, requirements for containment and disposal of the recovered waste and incident reporting. A rough estimate of the spill volume can be generated from visual observation and identification of the source.

4.2.1.1 Vehicle and Machinery Spills

Incidents involving loss of a petroleum product from equipment or vehicles shall be considered a spill. After the spill has been flagged, the volume and extent of the spill estimated, and initial notification procedures implemented, the spill must be confined. Do not handle materials without wearing protective clothing (i.e. gloves, etc.).

- Determine if a spill response team is needed to complete the cleanup. If no, prepare a spill report and submit it to the onsite Chevron Representative. If yes, activate the local spill response team.
- Determine additional cleanup contractors are necessary for a major incident. If the answer is no, and the incident has been determined to be a minor spill, conduct the cleanup, inspect and file a spill report form. If the incident requires additional support, hire an additional cleanup contractor to complete the cleanup, inspect the site, dispose of the waste material and complete and file a spill report.
- Arrange for proper testing (if the substance is unknown, send a sample to a laboratory within San Bernardino County for testing and dispose of the waste.
- Closely monitor all cleanup activities.
- Ensure proper disposal of absorbent materials, containers and soils as required.
- Complete cleanup and restore damaged areas.
- Submit spill report to the Chevron Construction Manager.

4.2.1.2 Chemical Toilet Spill

Chemical toilets are self-contained and pose little threat to the construction site. Chemicals used in the portable toilets are biodegradable and generally non-toxic to humans. However, they can pose a danger to wildlife and sensitive habitats by virtue of heavy concentration of chemicals and human waste. They shall be pumped out at regular intervals. Toilets shall never be placed in or near environmentally sensitive areas or in areas with a potential for flooding.

In the unlikely event that a portable toilet spills during transport or relocation, the same procedures for other hazardous material spills shall be used. Disposal of absorbent materials shall be handled the same as other spills, with proper disposal by the toilet supply company.

4.2.1.3 Herbicides

Incidents involving a spill of a concentrated herbicide could potentially occur when storing or handling the material. After the spill has been flagged, the volume and extent of the spill estimated, and initial notification procedures implemented, the spill must be confined. Do not handle materials without wearing protective clothing (i.e. gloves, etc.).

- Determine if a spill response team is needed to complete the cleanup. If no, prepare a spill report form. If yes, activate the local spill response team.
- Determine additional cleanup contractors are necessary for a major incident. If the answer is no, and the incident has been determined to be a minor spill, conduct the cleanup, inspect and file a spill report form. If the incident requires additional support, hire an additional cleanup contractor to complete the cleanup, inspect the site, dispose of the waste material and file a spill report.
- Closely monitor all cleanup activities.
- Ensure proper disposal of absorbent materials, containers and soils as required.
- Complete cleanup and restore damaged areas.
- Submit spill report to the Chevron Construction Manager.

4.2.1.4 Unknown Hazardous Materials

There is always the possibility that personnel may unexpectedly encounter a hazardous situation when working on the site. The most likely materials that may be encountered during grading activities would be materials that are left over from past mining activities. If there is any doubt regarding the degree of hazard of the particular circumstance and personnel are unsure as to what measures to take, the following steps shall be taken immediately to ensure the health and safety of the personnel involved.

- Stop work in the immediate area of the discovery
- Determine what has been encountered, i.e. tank or other container
- Cordon off the area and
- Request a spill team to further investigate and remove the object.

SECTION 5 CLOSING OF THE SPILL INCIDENT

SECTION 5 CLOSING OF THE SPILL INCIDENT

5.1 DISPOSAL OF WASTE

Following the cleanup of a spill, the waste, absorbent materials, protective clothing, and any soil that has been contaminated must be removed to a designated hazardous waste disposal area. All contaminated materials shall be sealed in 55 gallon drums and labeled with the contents. If the contaminant is unknown, a sample of the material must be collected and analyzed before disposal. A permit or approval in writing must be obtained prior to disposal of the drum. A copy of the permit and a chain-of-custody form (obtained from the disposal contractor or testing laboratory) must accompany the material and copies must be attached to the Spill Report Form submitted to the Chevron onsite representative. The contactor is responsible for the proper disposal of all waste and understanding the responsibilities under federal and state statutes.

5.2 FINAL REPORTING

All spill incidents that require cleanup must be reported. Notification must begin as soon as the incident occurs. The Spill Coordinator is responsible for the completion of the Spill Report Form (Appendix A). Completion of this form will assist in the assessment of the spill and will insure that the cleanup has been properly implemented. The spill report form must be submitted no longer than five days after the incident has closed. A copy of the permit or disposal approval and the chain-of-custody for the disposal must be attached to the spill report form.

5.3 FOLLOW-UP INVESTIGATION

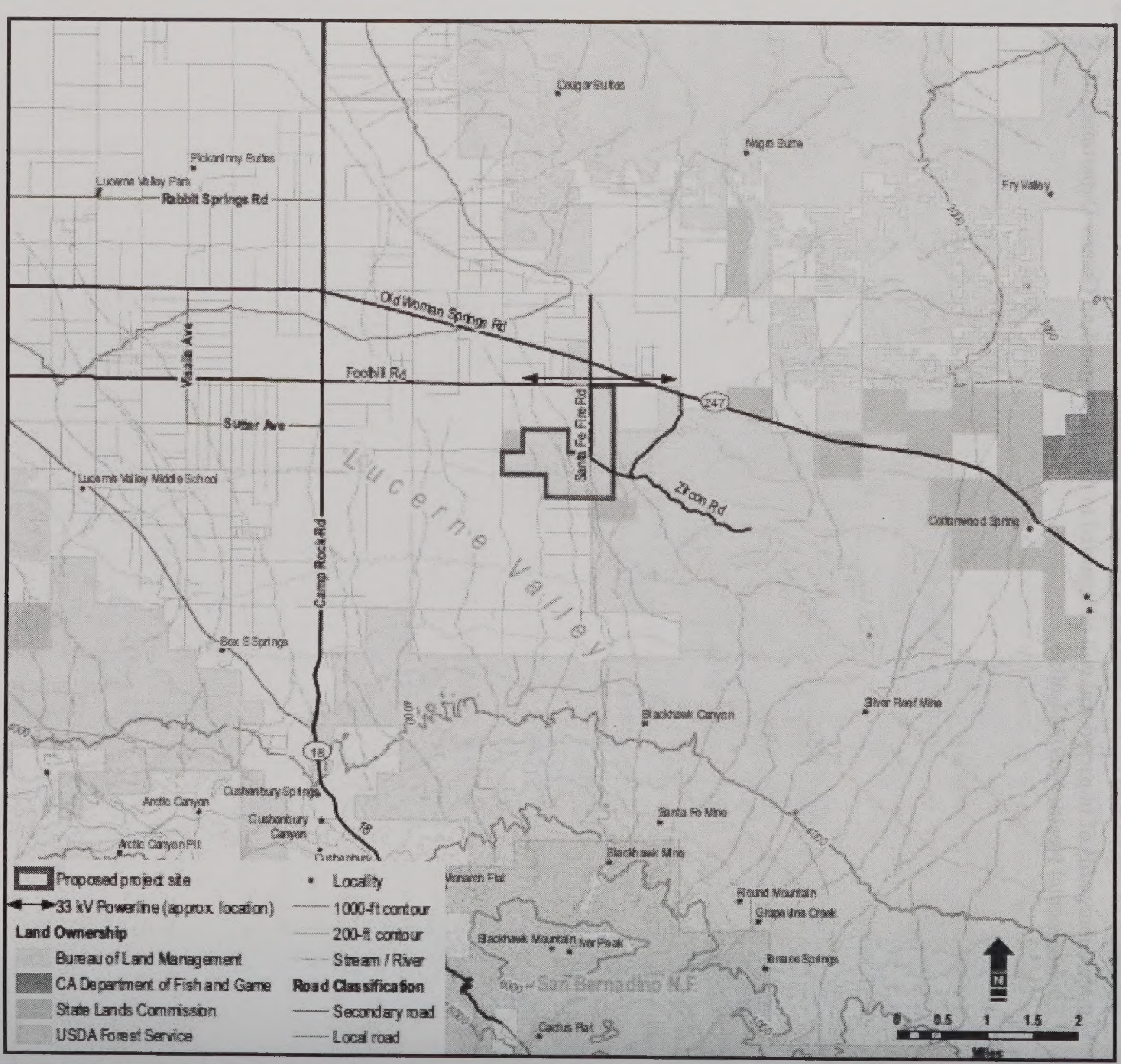
Contractor shall critique his spill response efforts and make recommendations or suggested modifications to contractor's operating procedures that could potentially prevent future spills or improve his response efforts. This critique shall consider the following:

- Detection
- Assessment/ Evaluation
- Response, and
- Command Structure

SECTION 6 NOTIFICATIONS

Once the spill has been assessed, the Chevron Site Representative will be responsible for notifying appropriate federal, state, and local agencies. Any spill at the project site of more than the reportable quantities as established under Appendix A of 40CFR172.101 or 42 gallons of petroleum based liquids or three cubic yards of impacted soil will be reported to the San Bernardino County Department of Environmental Health (909)884-4056.

Figure 1: Lucerne Solar Vicinity Map



APPENDIX A

SPILL REPORT FORM

NAME OF PERSON REPORTING THE SPILL:______________________________

TITLE/POSITION:____________________ PHONE NUMBER:____________________

CONSTRUCTION CONTRACTOR SPILL COORDINATOR:____________________

CES On Site Representative:______________________________

AUTHORIZED ALTERNATE (Contact only if you are unable to reach the CHEVRON ONSITE REPRESENTATIVE):

____

CONSTRUCTION CONTRACTOR SUPERINTENDENT:____________________

LOCATION OF, TIME AND SOURCE OF THE SPILL:____________________

TYPE OF MATERIAL RELEASED:______________________________

ESTIMATED QUANTITY OF MATERIAL RELEASED:____________________

SOURCE OF THE MATERIAL RELEASED:______________________________

____

CORRECTIVE ACTIONS TAKEN:______________________________

____

____

____

SPILL RESOLUION: ______________________________

____

____

____

SPILL PREVENTION COORDINATOR:______________________________

CHEVRON ONSITE RPEPRESENTATIVE:______________________________

COMMENTS:

____

____
